THE AMERICAN GAS LIGHT JOURNAL

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THE ANNUAL MEETING OF THE NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

The Thirteenth Annual Meeting of the New England Association of Gas Engineers was held at Young's Hotel, Boston, Mass., on the 21st and 22d days of February. The Association's members mustered in great force, there being no less than 64 gentlemen who answered to their names at roll call. President Slater, of Providence, occupied the chair, with Mr. Secretary Neal assisting. It was stated in the last issue of the JOURNAL that "Mr. Slater is plain and practical;" and all we need do now is just to refer our readers to his admirable inaugural address (which will be found in its proper place in the official report of the proceedings, begun on page 101 of the present number), to show that what we said of him is amply borne out. Mr. Slater need not have apologized nor asked for pardon because he did not confine himself "strictly to the subjects of engineering, and the processes employed in manufacture." We are confident that not a single individual who listened to the reading of this address could help being impressed with the force of some one of the interesting points with which the document is studded. It is not to be expected that a hard and fast rule can be made which will govern or be equally applicable to all cases of capitalization, as far as gas works companies are concerned; but there can be no doubt that Mr. Slater's figures, of five to six dollars of capital per thousand cubic feet of yearly manufacture, are quite possible of easy attainment, and should, in the great majority of instances, be ample and sufficient.

Mr. Slater, in dealing with the ever-present problem of how to reduce the price of gas to the consumer, recommends, as a means of furthering that end, any one or all of three courses—viz., (1) by dividing a smaller dividend for a time; (2) by increasing the sales of gas; (3) by reducing the capital. Two of these propositions are pretty certain of being considered, by the average director or stockholder, as savoring too much of the heroic; but let us see whether the director or stockholder is justified in entertaining such a view. Take the case of the concern which is burdened with a capital account of $10 per thousand feet—let the aforesaid director satisfy himself honestly as to how much, if any, "water" exists, and we fail to see how our director can consider himself as being subjected to very "heroic treatment" in a reduction of capital to a basis which will represent the value of his plant. More particularly so is this the case when he finds that, although the nominal value of his share holdings may have decreased, the value of what is left is quite materially increased in dollars and cents. The same style of reasoning may be applied to the first proposition. This, then, brings us to the consideration of the question of reducing the price by increasing the sales. The effect of such a measure has been so often spoken of in our columns that it is needless to revert to it here. There cannot be any question as to the certain efficacy of such a proceeding.

Mr. Slater speaks his opinion of what he considers as the best methods of manufacture and enriching in no uncertain or hesitating manner, and places himself fairly and squarely upon the record. He also discusses competition, and suggests an easy and certain method of procuring union of action in matters which are sure to be of even more vital moment in the future than they are at present.

Our lack of space prevents us from making a more extended review of Mr. Slater's address; but we shall revert to it again. We would bespeak for it from our readers the thorough study which its importance deserves.

The papers read before the association were the following: On "Half-hourly Observations on the Yield and Candle Power of Gas," by Mr. W. A. Learned; on "Steam Heating *v.* Gas Heating," by Mr. F. C. Sherman; on "The Comparative Value of Retorts," Mr. Wm. Yorke; on "Regenerator Furnaces," by Mr. W. A. Stedman; and on "Yield of Coke per Ton of Coal," by H. A. Allyn. These papers will all appear in the JOURNAL in due course. The discussion on the paper of Mr. Stedman, was very interesting, and many points of importance were elicited during its continuance. President Slater in his address said, "Many seem to think that a paper to be read before our association should be an account or a description of some wonderful invention or remarkable experiment that has been made; but such ideas are entirely erroneous." Those who heard Mr. Stedman's paper read, and listened to the discussion which it evoked, ought to bear in mind in the future just what President Slater said, and pay heed to it. The paper was

but a simple account of what had been accomplished by its author, in certain workings; and was put together without any attempt at mystification.

A slight change was made in the programme as published beforehand. The banquet, which was to have been held at 6 o'clock P. M., on the evening of the 22d was served at 2 o'clock P. M., of the same date, in order to give all a chance to be present—some of the members desiring to start for their homes by the early evening trains. The details of the "spread" were complete in every particular, and all agreed, when the hour for departure arrived, that the Committee of Arrangements had "covered themselves with glory."

DIGEST OF GAS CASES.—GREENOUGH.

We can call to mind the names of several gas engineers who make it their boast that their book-shelves hold all the publications extant bearing on the gas business. We could mention the names of several gentlemen whose libraries are so nearly perfect in this regard that their owners have good cause to be proud of them. If we were to spend a half hour in looking over one of these special collections of books could one fail to be impressed with the fact that they are all of foreign origin and treat of gas business of foreign lands? Nor can we make an exception of any particular division of the industry, for if we turn to books treating of the manufacture of gas in general we will meet such books as Kings Treatise, Hughes, Newbigging, Schilling, Richards and others, all of which are published abroad. The same remark will hold in regard to such books as Stevenson on Legislation; Lunge, on Residuals; Graham, Treating of Coals. It is therefore with no small degree of pleasure we put on our shelves a work which is American in its inception and its treatment. Our satisfaction would be greater were it a work on a branch of the business of more interest, nevertheless the publication will be one of great usefulness to the gas manager, giving him, as it does, in concise form, the decisions of our courts on gas matters, as well as the laws of each state relating to the same business. As a compilation of decisions one may safely accept it as complete; but its utility would be increased were it supplemented by a commentary on the conflicting cases; though we must admit that the demand for works of this character is so limited as hardly to warrant one in undertaking such a heavy task, unless, perchance, he should be willing to do it as a labor of love.

Such comments would be very useful when considering such cases as Strawbridge *v.* City of Philadelphia, Holly *v.* Boston Gas Company, and Smith *v.* Boston Gas Company, for after perusing the three cases one is left in doubt as to whether a leak from a pipe is or is not *prima facie* of neglect on the part of the gas company.

The many cases raising the question of the public character of a gas works also leave the reader somewhat in the dark; but we take it that a company is not in these days anxious to refuse to supply a party with gas, provided he will comply with the company's rules, so that the question involved in this *quasi* public nature of a gas concern, as to whether or no they will have the right to refuse to sell a person gas is not of vast importance. But the case of Shepard *v.* Milwaukee Gas Company, would show that the rules adopted by such concerns should be carefully framed. A would-be consumer can be made to sign just regulations, but not such as are unjust. A regulation should not be adopted on the plan that it can do no harm to have it included in the rules. If it will stand water, well and good, if not, it may prove a serious hindrance.

Taking the Digest, all in all, we can safely say that every gas manager will find the work of great service.

The Society of Gas Lighting.

At the regular monthly meeting of the Society of Gas Lighting, held at the works of the Brooklyn Gas Light Company, on Thursday, Feb. 15, the following paper was read by C. V. Smith, M. Am. Soc. C. E., on

GAS SCRUBBERS.

We hear much high commendation at the present time of the system of scrubbers known as the "Standard" washer-scrubber. It doubtless has its merits, or its introduction would not have been secured as it has, by its use in works managed by some of the best engineers in this country and in Europe. I am strongly of the opinion, however, that the real merits of other systems have been neglected, and that the adoption of any apparatus requiring the constant use of mechanical power is rather a step backward than forward. We contend that the electric light must be unreliable simply on the ground that its production depends upon the constant, unvarying, never-ceasing movement of machinery actuated by motive power. How, then, is an important piece of apparatus for purifying gas any more reliable, when it depends upon the same conditions for the performance of its functions?

The case of an exhauster is not one in point, for no purification depends upon it; and the manufacture may proceed without it, and no detriment occur to the quality or purity of the gas.

The system of tower scrubbers, known as the Livesey system, has performed its work so well, and with so little attention, at the works under my charge, that I desire to call your attention to some points in connection with it. As you are aware, we have two of these towers at each station, and from the time of their completion in 1876 up to the present they have been in constant operation, and the annual expenditure upon them has not amounted to $10 apiece. It has never been necessary to clean the interior of the scrubbers in any way; and an examination into their condition a short time since showed that the wooden slats were as clean as they were one month after the gas was first introduced; and the distribution of water, as it appears at the base of the scrubber, is as perfect as when it first commenced. This perfect distribution of water is doubtless the secret of the success of these scrubbers. To insure the latter, it is necessary to eliminate the last traces of tar from the gas before it enters them. This we do most effectively by means of a *dry* zig-zag scrubber, as it has been clearly proved in our case, by experiments carefully conducted, that while a limited surface of dry boards thoroughly removes the tar, no practical amount of wet surface will have any effect in so doing.

They are as near automatic as it is possible to make them. The water for use in the scrubber is used to distribute itself, and the quantity is a minimum. During the past year there has been passed through them over 1,300 million cubic feet of gas, which at the outlet was absolutely clean from free ammonia. The water used during the maximum make was three-quarters of a gallon per thousand cubic feet, and 23 pounds of sulphate per ton of coal carbonized was the average result obtained from the liquor produced at the works.

Although we have two scrubbers at each station, still but one is in use at a time; consequently the above work is to be credited to two scrubbers 16 feet in diameter and 60 feet high. The ground space occupied by each tower will not exceed 22 feet square.

From an experience of six years, I maintain that no apparatus designed for this purpose has ever done more thorough, efficient, or economical work; and when we hear loud changes rung on the new things of the day, which may be good in their way, let us by no means forget the good of yesterday, and be careful lest we are carried away with ideas that are more glittering than useful.

The Petroleum Outlook.

The first month of 1883 presents very little change in our figures from those given in December.

There has been a slight increase in the daily average production over last month, amounting to some 1,600 bbls., making the amount for January 62,849 bbls. against 61,210 bbls. in December.

The new work in the Allegheny, Bradford and Warren fields has been light during the month and undoubtedly will continue to be light through the remainder of the winter, and it will be hardly possible to keep the production in those fields up to their present limit.

The only points of interest to the trade are Forest County and Bald Ridge in Butler County. In the former the new wells completed during the month have with one or two exceptions come in small producers or dry holes, which demonstrates our previous statement that the territory was spotted and uncertain. The Bald Ridge district has added some two or three new wells, which started off at some 200 to 300 bbls. each, but soon came down to very moderate pumpers, producing salt water with the oil.

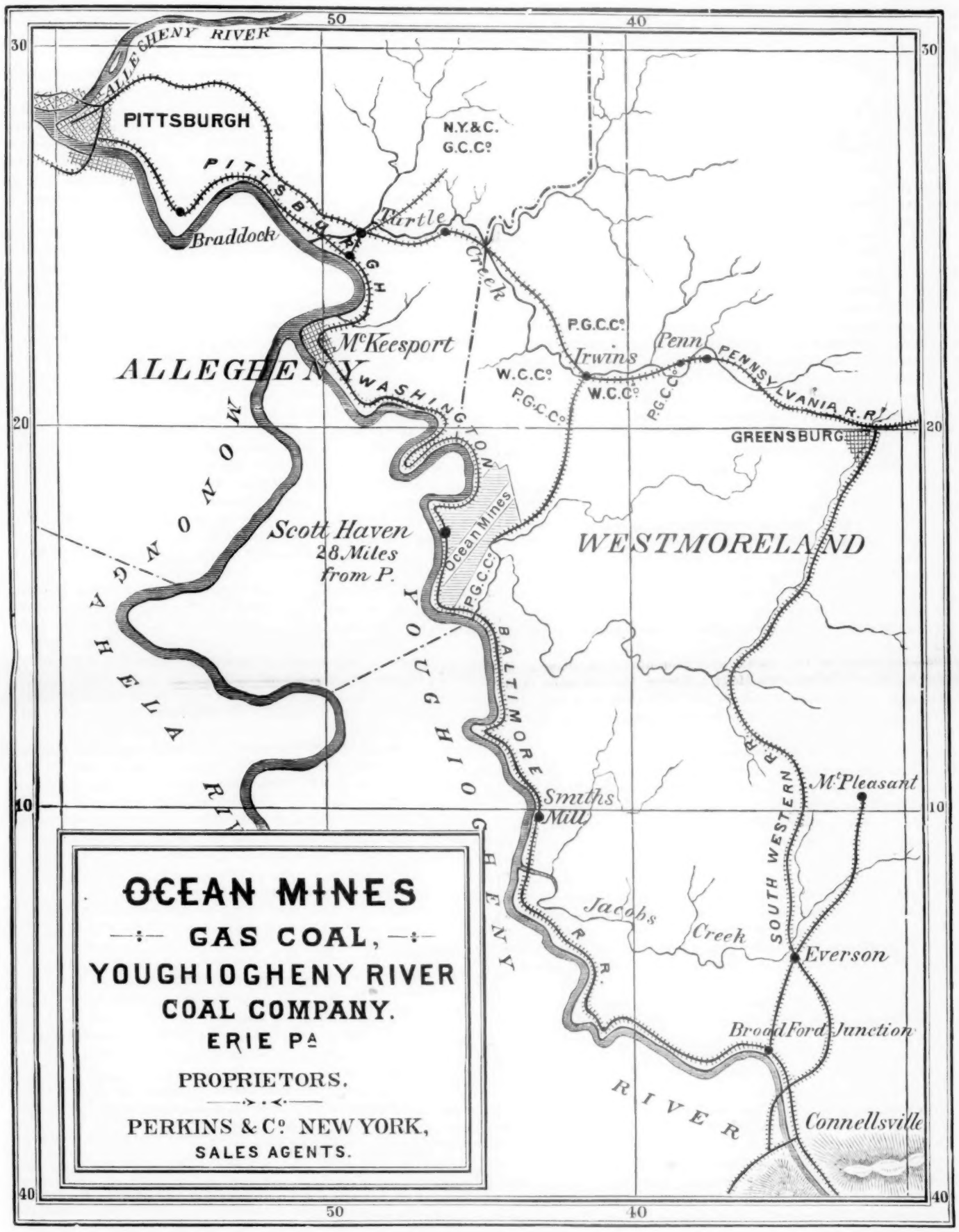
On looking over the situation we would re-affirm our statement for last month, that:

"In our opinion nothing but the discovery of a new district like that of Bradford, with a uniform and certain deposit of wide extent, will give us a continued accumulation of stocks, and the incidentally prevailing low prices, such as we have had for several years past; and fortunately for the holders of stocks no such district is at all indicated by any existing development.

Altogether we think there is reason to believe that we have during the year just gone by, passed the valley of the shadow of severe depression, and may look forward upon this year with more hope than we have had reason to have for several years."

Producing wells,	Jan.	1882,	18,400.	Decrease, 800
" "	"	1883,	17,600.	
Drilling wells,	Jan.	1882,	422.	Decrease, 296
" "	"	1883,	126.	
Completed wells,	Jan.	1882,	347.	Decrease, 222
" "	"	1883,	125.	
Rigs	"	1882,	438.	Decrease, 307
" "	"	1883.	131.	

—*Petroleum Reporter.*



MAP SHOWING LOCATION OF YOUGHIOGHENY RIVER COAL COMPANY'S OCEAN MINE GAS COAL.

The Ocean Mines, situated in the center of the celebrated Youghiogheny Coal Field, now embrace an area of three thousand three hundred acres, giving a total capacity of *thirty-six million tons*.

The Youghiogheny coal is now accepted as the *best American Gas Coal* obtainable, and the facilities of the Ocean Mine are not surpassed by any other colliery in the United States.

PERKINS & Co., *General Sales Agents*,

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The Management of Small Gas Works.

By C. J. Russell Humphreys.

The remark is frequently made that in the gas literature of the day the wants, the necessities, the interests of the smaller undertakings do not come in for their full quota of attention. This stricture may or may not be sound. Certainly we do not think it would hold with any greater force in this country than in foreign lands, rather do we incline to the converse opinion. A moment's reflection will show that there are forces at work whose tendency is in this direction.

The leaders of the gas profession are, as a rule, connected with large works, and it is they, who in great measure shape the course of our official organs and associations, it therefore follows naturally that subjects relating more particularly to the administration of the large and medium sized concerns should receive attention at the expense of their more diminutive neighbors. That this remark is less applicable here than abroad cannot be gainsaid; for a list of the leading gas men of this country would not be complete without the names of many gentlemen connected with the semi-medium-sized works, if we may be permitted to use such a term. And it is from this consideration that we stated that the stricture so often passed to the effect that the interests of the larger concerns receive an undue share of attention in the current literature, would hold in an infinitely less degree here than abroad, where a list of the leaders of the profession would be compiled without entering many of the small country towns. The affairs of smaller works demand, and with justice, the larger share of attention at the hands of chroniclers of gas matters, for the reason that large works usually have a head who is thoroughly versed in gas engineering, and consequently stands in little need of guidance; while on the otherhand, the managers of the less important undertakings have, as a general rule, little time to devote to study or to travel abroad to see what their brethren are doing.

We would not, however, leave it to be inferred from these remarks that we expect the present series of articles to fill the void and be a complete guide to those who have charge of small works. We entertain no such hopes. Our purpose is to make a running commentary on the different sections of gas management with reference to small undertakings, which we will preface with some notes on the erection of the necessary plant. If the dissertation produce a discussion in regard to the subjects broached, our work will not have been in vain.

At the outset let us say that we hold to the opinion that there are very few small gas works in the country but can be made to pay a good return on a moderate capital, provided they adhere to the old, thoroughly tried, and never found wanting system of manufacture known as the coal-gas method, with the additional proviso that their affairs be ably and economically conducted.

That there are many companies seriously handicapped by having plant erected at a point difficult of access by rail or water, cannot be denied. It is indeed strange that projectors of gas works should frequently show such poor judgment in this particular. It will frequently be found that a gas company in their eagerness to follow the text books' advice, and place their works at a low level as regards the district to be supplied, will subordinate all other considerations to this desideratum. The consequence is there can be found throughout the country a vast number of works so placed that material used therein has to be carted a long distance. And sometimes, as if this were not sufficient, the future economical conduct of the concern is compromised by the selection of a site adjacent to improved and improving property, whence will arise complaints from the noxious odors which are supposed to emanate from gas works. The practical gas engineer, however, while fully recognizing the advantage to be gained by erecting the works on a low level, will not allow it to overshadow all other considerations; he will give it its just weight as a factor in the selection of a piece of ground, but no more. A low level is but one of the objects to be kept in view. If the district to be supplied is on tide-water, every effort should be made to procure property along the water front. And care should be exercised to make sure that the course of a future street does not run through the grounds. This is often a serious drawback, because when the roadway is opened it will be found to sadly interfere with the quick and cheap transit of material between the different parts of the works. If to the advantage gained by having a good water front the further desideratum of rail or canal communication can also be secured, it should by all means be taken advantage of. And if the relative levels of the track and the selected site are such as will admit of siding being extended into the grounds at a height of fifteen feet, then another point is scored. It should, however, be remarked that too much importance should not be attached to the proximity of a railroad, unless it is ascertained that such road has direct communication with some of the standard gas-coal mines, for it may, on investigation, be found that the freight rate on coal is so high as to prohibit any advantage being taken of his mode of conveyance. Of course, in an inland town, removed from all water courses, the best that can be done is to select a spot adjacent to he railroad, and if possible, on a lower level. Again, if the property offered is on the bank of a running stream, the necessity of elevating the buildings out of the reach of a possible overflow of the waters must also be considered. We have doubtless said enough on this topic to convince the reader that the selection of a site for a prospective gas works is neither an unimportant nor easy task; but we have by no means exhausted the subject.

A plot of ground may fulfill all the requirements we have outlined, yet from the natue of the soil, may prove an injudicious choice. Thus a marshy or filled-in plot should not be accepted unless better is not to be had, because it will necessitate piling under all foundations, and make the erection and proper maintainance of the buildings both difficult and expensive. Under no circumstances should a piece of land be settled on, until a boring has been made to ascertain the exact nature of the soil; if upon investigation it is found to be of a compact clayey consistency, then another point has been scored.

If a site fulfill the requirements we have noted, it will not make a vast difference whether its level be a few feet below or above the place to be supplied, though of course if it is to be had, the low grade is preferable, as advantage can then be taken of the natural tendency of the gas to rise, admitting of its being distributed from the works at the minimum pressure. As gas gains but one-tenth of an inch pressure for ten feet of elevation, the consideration of a few feet one way or the other may be ignored if by so doing greater advantages may be secured. Another point to be borne in mind when selecting ground is the chances of being able to procure land for future extensions at a reasonable figure. Particular care should be taken to avoid the residential portion of the town, because if people see the gas works, they are apt to believe that they smell them. It will sometimes happen that choice will have to be made between a site easy of access by water or rail, but owing to the nature of its soil ill-adapted to building purposes, and one of good firm ground, well fitted for the economical erection of the plant, but on account of its position necessitating the trucking of coal and other supplies. Under such circumstances great perspicuity must be shown in assigning to each factor of the case its just value. On the one hand is the interest on the extra capital expended on the works; on the other hand is the cost of cartage. We will not err if we place this latter item at fifty cents a ton, which will include the stacking of the coal. In a works carbonizing 1,000 tons a year, this would equal $500; this figure will have to be increased by $45 to cover the moving of 90 tons of lime, etc. This would represent the interest—figuring at 10 per cent.—on say $5,500. If, though, 2,000 tons of coal and 180 tons of lime, etc., were used per annum, then the increased cost of conveyance would be equivalent to the interest on $11,000. And in fixing on the probable amount of coal to be carbonized, allowance must be made for future growth, the rapidity of which must depend on the nature of the town to be lighted.

If after careful calculation any uncertainty exists as to which plot, all things considered, would be the more beneficial, let the site adjacent to rail or water way have the benefit of the doubt.

The extent of real estate to be purchased must also be thought of. While it is well to make ample allowance for the future need, it is possible to err in this regard, thus throwing on the works the burden of earning a revenue on capital locked up in this manner. If, however, land is cheap and taxes light, it would be well to be over-generous in the matter rather than the reverse.

Again we repeat, too much care cannot be exercised in the selection of a site, as a mistake made at this early stage of the company's history will be felt through its entire career.

[To be continued.]

Steam Heating and Gas Companies.

The London *Journal of Gas Lighting* makes use of the following language anent the reported course of action proposed by a steam heating concern in Hartford, Conn.

"It is reported that the Hartford Steam Company are seeking such an amendment of their charter as will permit them to manufacture and distribute gas of "cheap grades," for heating purposes. This is not an isolated case, for several Steam Companies in other cities of the Union are also endeavoring to obtain authority to supply gas. Fortunately it is not so easy here as in the United States for every new speculation, requiring the use of the subsoil for public thoroughfares, to go anywhere and do anything, with a cheerful disregard of the necessities and convenience of the public. The Gas Company of Hartford, and all other undertakings similarly circumstanced, have certainly cause for complaint, if not for alarm, in connection with this attempt—which may or may not be legally and commercially successful—to steal a march upon them. The question of the "grade" of gas to be supplied by the quondam Steam Companies is nothing to the purpose. From heating to lighting gas is but a short and easy step in the native land of petroleum; and if every Steam Company is to be allowed to take refuge from bankruptcy in the Hartford manner, the gas consumers will have to wait long for the era of cheap gas. It should by this time be recognized in the States, as it has long been in this comparatively benighted land, that competition is the surest way to make gas dear and keep it so."

[Official Report.]

Thirteenth Annual Meeting of the New England Association of Gas Engineers.

Held at Young's Hotel, Boston, Mass., Feb. 21 and 22, 1883.

The Association was called to order at 11 A.M. on the morning of the 21st, the President, A. B. Slater, of Providence, R. I., in the chair.

The first regular order of business was the calling of the roll, and the following members reported as present:

Wm. Yorke, Portland, Maine.	L. P. Gerould, Manchester, N. H.
A. M. Norton, Nashua, N. H.	W. H. Frost, Exeter, N. H.
Chas. F. Warren, Manchester, N. H.	John Andrew, Chelsea, Mass.
H. A. Allyn, Cambridge, Mass.	H. A. Atwood, Plymouth, Mass.
David Brayton, Brockton, Mass.	J. H. Burnham, Boston, Mass.
Geo. D. Bill, Malden, Mass.	David Boynton, Chicopee, Mass.
Geo. D. Cabot, Lawrence, Mass.	Oliver E. Cushing, Lowell, Mass.
H. F. Coggshall, Fitchburg, Mass.	D. W. Crafts, Northampton, Mass.
C. W. Cochrane, Gloucester, Mass.	John Cabot, Lawrence, Mass.
P. Coyle, Charlestown, Mass.	W. B. Durfee, Jr., Fall River, Mass.
Samuel Fowler, Westfield, Mass.	W. W. Greenough, Boston, Mass.
M. S. Greenough, Boston, Mass.	Edward Jones, Boston, Mass.
Milton Jewett, Clinton, Mass.	Edward C. Jones, Boston, Mass.
Chas. D. Lamson, Boston, Mass.	David Moore, Salem, Mass.
G. L. Manchester, E. Hampton, Mass.	Geo. B. Neal, Boston, Mass.
Thos. J. Pishon, Boston, Mass.	C. F. Prichard, Dedham, Mass.
J. F. Rogers, Boston, Mass.	J. H. Rollins, Worcester, Mass.
C. F. Spaulding, Brookline, Mass.	J. Q. A. Spear, Boston, Mass.
W. H. Snow, Holyoke, Mass.	C. S. Spaulding, Brookline, Mass.
Aaron Thompson, Woburn, Mass.	Wm. Tarbell, Waltham, Mass.
D. D. Tilton, Newburyport, Mass.	J. R. Todd, Natick, Mass.
Robert B. Taber, New Bedford, Mass.	Gideon Wood, New Bedford, Mass.
L. W. Wells, Marblehead, Mass.	E. H. Yorke, Lynn, Mass.
J. H. Armington, Brooklyn, N. Y.	S. G. Stiness, Pawtucket, R. I.
Wm. A. Stedman, Newport, R. I.	A. B. Slater, Providence, R. I.
Ogden Gilmore, Norwich, Conn.	C. H. Nettleton, Birmingham, Conn.
F. C. Sherman, New Haven, Conn.	W. W. West, Exeter, N. H.

On motion of Mr. Stiness, an invitation was extended to all members of the gas fraternity now visiting Boston, and not connected with this Association, to meet with the Association and to participate in its labors and festivities.

Messrs. David M. Dunning, Treasurer of the Auburn Gas Company of Auburn, N. Y., Wm. H. Price, late President of the American Gas Light Association, A. C. Wood, of Syracuse, N. Y., and others accepted the invitation.

On motion of Mr. Stiness, the reading of the minutes of the last annual and semi-annual meetings of the Association was dispensed with, the same having been published in the American Gas Light Journal.

NEW MEMBERS.

E. G. Pratt, North Attleboro, Mass.	G. E. Wetherbee, Roxbury, Mass.
T. R. Martin, Portsmouth, N. H.	F. C. Blood, Ware, Mass.
H. B. Leach, Taunton, Mass.	W. A. Learned, Watertown, Mass.
J. L. Hallett, Springfield, Mass.	J. A. Coffin, Gloucester, Mass.
J. N. Stickney, Rockville, Conn.	A. M. Tarbell, Newton, Mass.
C. L. Gerould, Manchester, N. H.	F. R. Davis, Athol, Mass.

On motion of Mr. Cabot, the Secretary was authorized to cast the ballot of the Association for the gentlemen named. The ballot was cast, and they were declared unanimously elected to membership. Ten of the newly elected members appeared and were introduced to the Convention.

The Secretary—With the permission of the President, I wish to give notice that at the meeting of Directors held last evening the fee for membership was fixed at $5, and it was voted that members be furnished with a dinner ticket without charge. To others, except the invited guests, tickets will be for sale at $3 each.

I will also state that I have appointed Mr. P. Coyle as Assistant Treasurer, and he will be ready to receive the fee of $5 from the members, including the new ones.

I will further state that the Directors have furnished to the Association a new record book, to replace the old one, which is nearly worn out after twelve years of service. In the new book the articles of agreement have been handsomely engrossed, and all the members are requested, during the session, to come forward and add their signatures.

The President then delivered the inaugural address, as follows:

PRESIDENT'S ADDRESS.

Gentlemen of the New England Association of Gas Engineers:—Another year, with its hopes, its fears, its joys and sorrows has passed into history; and as we assemble together in annual convention, amid our friendly greetings, the question naturally suggests itself, What have we accomplished as an association since our last annual meeting?

Coming together as we do but once in the time intervening between the yearly meetings, and as many of the members have seemed to make it a sort of vacation from their routine of duties, little real business has been transacted at our semi-annual meetings. Had the members generally, when at New Bedford last August, evinced as much enterprise, business ability, and interest as did the resident members, our record there would have been improved. Whatever we shall have done, or whatever we shall have failed to accomplish at this meeting, our record will show, and must make it such a portion of our history that every member of this Association cannot but contemplate with pride or regret; for certainly it is in the power of the individual members of this Association to do something that will serve to make it of that character and value that, both as individuals and as an Association, we need not be ashamed of it.

The New England Association of Gas Engineers was organized on the second day of February, 1871, just twelve years ago. A brief retrospective glance at the condition of our business at that time, the pleasant acquaintances then and since formed, reviewing the gradual progress made in all the various operations and processes employed in the manufacture of gas, might not be wholly unprofitable; but suffice it to say that the original roll comprised the names of 16 members, and at the first meeting 9 names were added, making in all 25 members, representing 24 gas companies; and up to this time there are but four names missing from the original list.

But the present and future are what demand our attention. In this age of achievement events are crowding upon each other in rapid succession, and we must act well our part or be pushed aside to give place to more active workers. We meet together as practical men, having committed to our care and management an industry of vast magnitude, and which, under ordinary circumstances, cannot be wiped out in a day. The roll of this Association now shows a membership of 81 active and 2 honorary members, representing 71 gas companies, and capital of not less than $16,000,000. Let us ask ourselves the question, What are we organized for? Why are we here to-day? The preamble of our articles of agreement reads: "Whereas, it is most important to the manufacturers and to the public that the best processes shall be employed in the manufacture of gas, and whereas, it is most desirable to obtain the advantage of the experience of gas engineers scattered throughout New England upon the various problems presented for consideration, etc." Now, keeping in mind the objects there stated, and when we consider that we are practical managers of gas works, perhaps I should confine myself strictly to the subjects of engineering and the processes employed in manufacture, but trust I may be pardoned if I shield myself under that clause of the preamble which embraces "the various problems presented for consideration," depart somewhat from the usual custom, and consider some matters that perhaps come more particularly within the province of the directors of gas companies.

While the engineer may be doing all that could be reasonably expected of him with the means at his command, yet, when the directors take the amount of net earnings for the year, and calculate the percentage on the capital standing on the books, and find it to be less than 5 or 6 per cent., instead of 8 or 10, it would be likely to result in a consideration of several questions bearing upon the subject, and among them is one of vital importance, not only to the engineer, but to the directors and stockholders as well; and that is, the relation which the quantity of gas sold bears to the capital invested. The manner in which the accounts are kept also has much to do with it, as well as the judgment, business ability, and management of the engineer.

Probably no manufacturing business requires a greater annual expenditure for repairs and renewals than a gas works. If these are not promptly made and thoroughly maintained, and the works kept up in the best possible condition—if the works are allowed to depreciate in value, or capital is unwisely expended from lack of care, energy, and judgment on the part of the engineer—the directors, in dividing the earnings as appears by the books, may be misled, and in such division of profits actually encroach upon the value of the plant which represents the capital. To meet the demands for large quantities of gas which were made upon gas companies during a period of inflated values after the civil war, when gas companies were called upon to expend large sums of money for extending and increasing the capacity of their works for manufacture, if such portion of outlay as was then and since carried to construction account has not been properly cared for by a reasonable amount carried to depreciation account every year, then the capital is not fairly represented by the plant. Of course, local circumstances and conditions govern to some extent this part of our business, and wise men differ in their judgment as to what is a fair and reasonable amount of capital

that should be employed for the manufacture of each thousand cubic feet of gas sold.

It is a fact not generally realized among even business men who are not familiar with this business, that the capital of a gas company, in proportion to the amount of receipts or income from all sources, is much greater than that required for almost any other manufacturing business. If the quantity of gas manufactured during the whole year could be divided into an average quantity to be made each day, the amount of capital could be materially lessened; but when we understand that the works of a gas company must be of sufficient capacity to furnish the largest quantity of gas called for during the whole of any 24 hours of the year, and that this large quantity is required for but a very few days when the nights are longest, and that during the summer time, when the nights are shortest, the quantity necessary to be supplied is but a quarter or a third of that required when the nights are longest, the problem is not difficult of solution.

In my judgment, a fair and reasonable amount of capital per thousand cubic feet of yearly manufacture, taking local and other circumstances into consideration, should not be more than $5 or $6. The thought naturally occurs, what is a company to do that finds itself with a capital of $8 or $10 per thousand feet?—for the price of gas must be still further reduced. There are three ways of meeting such a condition of things, viewed from the standpoint of meeting the demand of the times for more and cheaper light.

First. By dividing a smaller dividend for a time.

Second. By increasing the sales of gas.

Third. By reducing the capital.

I am aware that objections may be urged by directors and stockholders to some of these plans; but I am also firmly of the opinion that a few years only would suffice to place most companies in such a condition that directors and stockholders, as well as engineers, would be pleased with the result. The second of these plans is quietly but steadily and surely at work, tending toward reducing the ratio of difference under consideration; for it is the rule, without many exceptions, that gas companies are selling more gas in a given time than ever before. It is a very simple proposition, but still one that should not be ignored by the directors of gas companies, that the illuminant which is the most practical and convenient for general illuminating purposes, furnishes the most agreeable light, free from noxious effects upon the eye and health, sure to be ready at all times, whether it be day or night, and which can be furnished at the least cost to the consumer, will certainly take the lead, whether it be candles, oil, gas, or electricity. So let us make the most of our time, and bend our energies upon the grand central question, How can we cheapen the cost of producing our gas?

There will always be local conditions and circumstances, favorable or unfavorable, as the case may be, that must remain practically the same. For instance, the cost of coal will vary according to locality. The cost at the mines is the same for all. Transportation by water, other things being equal, will increase with the distance from the point of shipment; transportation by rail, for inland localities, will still further add to the expense. But a part of this extra cost of transportation to places distant from the coal fields is offset by the higher price received for coke in such localities. The same general conditions and influences apply, to a greater or less extent, to other materials, including labor.

Having the coal and other materials in store, we must look to the utilization of our residual products and the operations of the retort house as perhaps the principal sources where we can hope to accomplish the best results. Many of the gas works of New England to-day are producing less than 6,000 cubic feet of gas per retort per 24 hours, and 7,000 to 8,000 feet in a very few works is considered a large yield per mouthpiece. A majority are obliged to use, as an average quantity, 45 per cent. of the coke made for heating the retorts. A few reach as low a percentage as 35 or 40, while some use 50 per cent. and over. But it is possible, even in New England, and under all the varying conditions of practical working, including the different qualities of coal, to reach an average yield of over 10,000 cubic feet per retort, with a consumption of coke in the furnaces of but little if any over 25 per cent. of the amount made. * * * * * *

Within the last few years many experiments have been made in different places with various forms of furnaces, and the immediate future is likely to develop improvements in furnaces and bench settings in this country, as well as in foreign lands, which will show marked economical results. It is instructive and amusing to notice that in some works a certain form of furnace may be used in such a way as to secure advantages which are gratifying when viewed from the standpoint of economical manufacture, and yet, when the same thing has been introduced into other works, and after continuous working and repeated trials they have been abandoned as failures, or at least they have shown no special improvement over what has been accomplished with ordinary furnaces and settings; and in other cases, if any advantages have been obtained they have been at the expense of greater disadvantages in other directions.

It is not improbable that one cause of failure in some instances may have been the use of fire stock, or material of inferior quality, poor workmanship in construction, and, last but not least, lack of attention in regulating the dampers and draughts, and also the supply of air for the supplementary combustion. One, or all of these causes combined, would be sufficient to cause conditions which would explain the variable reports which have come to us from different places. Ordinary masons are often employed to build furnaces and construct bench work, which is done in much the same manner that contract building work is done. It is of the utmost importance that, having good material, it should be put together with the least possible joint space, using mortar of such consistency as will admit of placing brick to brick, leaving no thick joints, which are easily and quickly worn away by the action of flame and intense heat.

Whatever may be in process of experiment in the way of furnaces and settings, and however successful any present or future experiments may be, there must be some merit in any combination of furnace and setting that will properly work off 275 to 300 pounds of coal every three hours by each retort, without any increased trouble from excessive heats or accumulations of thick tar or pitch, etc.; and it must be considered good work, until better results can be reached in practical working.

It is perhaps an open question yet, with most engineers, whether the best practical work can be obtained with small or large retorts. At the present time my preference is for large retorts. In an experiment with a single bench, built by itself, with Davison retorts (10 ft. 3 in. long, four feet of the back end 36 in. wide, front end 15 by 26 in.), and with the ordinary furnace, a yield was reached of 83,000 cubic feet per 24 hours, and a yield per pound from Westmoreland coal of 5.12 cubic feet of 16.91-candle power gas, without enricher, and with a consumption of coke in the furnace amounting to 33 per cent. of the quantity made.

I think it is a fact that needs no demonstration, that we cannot afford to use the old style of furnace any more. But engineers will differ in their opinions and judgment, as they are successful or unsuccessful in their experiments with any departure from the common furnace. Some succeed in the same direction where others fail; so each must be guided by his own experience, for success lies in the direction in which each can accomplish the best work on his own premises.

The tendency of late seems to be toward supplying a gas of higher illuminating power than has formerly been the custom. Within certain limits this is well; and in answer to the question what is the best enricher, I am free to say, after using naphtha for enriching our gas for four years, that, while a small works may perhaps use naphtha or oil to advantage in some respects, yet, without doubt, the best quality of gas is made when cannel coal is used for enriching. The conditions necessary to convert into a fixed and permanent gas such hydrocarbons as oil or naphtha are so delicate that in practice it is difficult to maintain them; consequently much of the time soot will be deposited, or the oil or naphtha is merely converted into vapor—the latter form is more likely to be the case. Yet the owners of the various patent processes all claim to do it perfectly. Your men who repair and clean the meters will tell you at a glance, on opening the meter, whether oil or naphtha has been used. I am cognizant of a case where naphtha had been used for a period of less than two years, by men who had had experience in that line, and it became necessary to take out every meter that had been in use and clean from it the tough, gummy substance that was deposited, especially in the valves.

You may be sure that when you are beset by parties who endeavor to convince you that your salvation is in using naphtha or oil for making gas, or enriching coal gas, that back of it is a patent apparatus you must buy, or you will never be successful; and the last man who comes along always has the best one. No, gentlemen; if you wish to supply your customers and the public with the best illuminating gas, give them straight, pure coal gas.

After accomplishing all that is possible in the retort house, we can hardly expect to effect much saving in the treatment of the gas, except in the matter of residual products. In the larger works, where improved means of manipulation have been substituted for the old, little can be desired so far as the gas is concerned; but the residuals should all be saved, and nothing wasted. Figuring on the basis of present values, it would seem that the managers of works carbonizing 15,000 or 20,000 tons of coal and upward should not be satisfied with less than 25 cents per ton for the ammonia water, and under favorable circumstances 50 to 60 cents per ton should be realized; and if each member of this Association would give proper attention to this matter, in less than a year's time I have no doubt that many works, especially those near the market centers, would be able to net from tar and ammonia water at least $1 per ton of coal carbonized.

Most companies should realize more from their tar than they do at the present time. The smaller works should never let a barrel of tar leave their yard for less than $2. A few get even more than that. At all works where ordinary furnaces are used a portion at least can be burned to advantage, especially where there is a ready market for coke. Where several small works are situated at not too great a distance from each other, a combination

of interests in this direction could be effected that would probably result in a greater net gain to each than they now secure.

Notwithstanding all that has been done during the last few years to cheapen the cost and improve the quality of the gas, there is yet much that may be done, for our resources are far from being exhausted. We must be able to sell gas at a price so low that our consumers can afford to use it any and everywhere that light and heat are required; and just as fast as we make progress in reaching this point, just so fast will we lessen the ratio of capital to the send out, and with the possibilities before us of cheapening the cost of gas, if we do what is within our reach the day is not far distant when our sales will be doubled.

We hear a great deal about oil gas, heating gas, water gas, etc.; but I have yet to be convinced that there is any water gas company in existence to-day that, laying aside the interest of the "patent process," or some special interest of the kind that someone has in it, but what could do better with coal gas, taking all things into consideration, than they now do. Water gas, as generally made, is practically prohibited by statute in some States, and should be in all. Whenever the poisonous nature of the gas is mentioned, it is silently ignored as being unworthy of a moment's notice. In fact, from the standpoint of water gas patents, one might infer that recent researches in chemistry had led to the discovery that carbonic oxide is not a poison; that all chemical text books were mistaken; that the aforesaid carbonic oxide is not only not a poison, but is actually a benefit to the gas. Gentlemen, we cannot afford to trifle with the health and lives of our customers by supplying a gas of such poisonous nature, when we can furnish an article that has not in its volume a quarter or a third of this poisonous element. The number of deaths that have occurred from the use of it since its introduction being more than has been known in the history of the business previously, is sufficient comment on that point.

Whenever any business is made successful you always find men who are quite willing to sacrifice personal motive and interest in other directions and exercise their philanthropic endeavors in serving the public in the same capacity, and the gas business is no exception to the rule. Probably most of you are aware that operations of this kind have been going on in various parts of the country for some time, promoted by several separate combinations or interests and their field of operation is not entirely outside of New England. The animus of some of these people may be imagined when I repeat to you a remark made to me personally by one who had a large interest in this class of patents, and who was gifted more with bravado than judgment. Said he, "All the gas companies in the country have got to come to me. I have got the money and the power to throttle the throat of every gas company in the country." Most of these gentlemen have a pleasing address, plenty of show of money and often have a way of explaining the matter so clearly to many members of municipal councils as to convince them that the public welfare can best be subserved by granting them the privilege of occupying the streets, and establishing a company to make gas by their patent process.

Members of this association should take it upon themselves to inform their directors of the operations these gentlemen are engaged in, and also to furnish the municipal authorities of their various cities and towns with such information as will tend to thwart the endeavors of these people to enrich their own pockets at the expense of the public, who are interested to at least an equal extent with gas companies. City and town authorities have only to study the history of all so called opposition gas companies to ascertain the results and effects in this and other countries, and to satisfy themselves that the only gain from such speculating schemes is to the pockets of the operators at the expense of every consumer of gas, as well as the city or town that is so short sighted as to allow them to dig up its streets.

In more than one instance have the efforts of directors of gas companies been seriously hindered by having to spend money to defend themselves against the schemes of speculators who have sometimes carried away large sums of money which might have been saved to the people in the price of gas, and at the same time the gas company has been left with an unnecessary increase of its capital. It is not improbable that these things will go on until it will necessitate action on the part of the State conferring to gas companies protection in their chartered rights and requre of them an annual report of their doings, and also restrict them within certain limits in their profits, as is the case in European cities to-day.

I am not sure that the time has not already arrived when gas companies should take the initiative in this matter, being guided by the experience of other countries, and proceed to secure such legislation in the several States as will effectually stop the operations of these speculators who, taking advantage of the ignorance of municipal authorities in regard to these things, often secure their aid to further their schemes. If our directors would properly inform themselves, take in the situation, and each New England gas company appoint a committee from its Board of Directors, say the president, a director or the engineer, with authority to act as he may deem to be for the best interest of the company he represents, meet and confer together, some united action could be taken, wise measures could be adopted, having for their object security and protection to both gas companies and consumers.

As I said before, having the experience of other countries to guide us, wise and judicious laws could be framed, which if enacted would give gas companies reasonable profits and a position secure from the interference of operators in so-called patent processes, and at the same time give consumers a feeling of satisfaction, which they do not now enjoy, of knowing that the profits of the business are not exorbitant as many consumers seem to think. This matter is worthy of your earnest consideration.

There are matters of interest which will, no doubt, be brought up in your discussions which I need not mention in this connection, as I have already taken up too much of your time, but I cannot let this opportunity pass without again calling your attention to the aims and objects of our association, which to my mind are too much neglected. Must it be said that we as New England men are degenerating, that we are are departing from the standard reputation of our ancestors? From the days of the Pilgrim Fathers down to the present moment, New England men have been identified with the prosperity and progress of almost every important movement and interest that marks our history. Go into any State in the Union, you will find the work of the brain and hand of the omnipresent Yankee. Go into almost any country in the world you will find the product of his inventive genius and skill. Could you blot out at once all the machinery and improvements that has been developed from the brains of New England men you would paralyze the mechanical industry of the world. Shall it be said of us, of this New England Association of Gas Engineers, that we are untrue to the traditions of our fathers?

Must a single member of this association feel obliged to connect himself to some other association of workers in the same business before he can feel that his time and money spent in attending the meetings, have not been entirely wasted? We have the ability and the material in this association, which if properly used, would invest each meeting with such interest that each member would feel and know that he had lost something if he were unable to be present. Let each member bring to these meetings the same spirit and energy with which he prosecutes his own business at home, none would have cause to complain.

Many seem to think that a paper to be read before our association should be an account or a description of some wonderful invention or remakable experiment that has been made; but such ideas are entirely erroneous. Let us have papers embodying the results of operations, experiments or trials which have resulted in failure. It will bring out the experiences of others in the same line, and oftentimes save some from spending money in doing the same thing. The efforts of your officers will be well nigh fruitless without your co-operation; with it the success of the New England Association of Gas Engineers is assured.

On motion of Mr. Stiness, a vote of thanks was tendered to President Slater for his very able and entertaining address.

[To be continued.]

The Electric Light Speculations.

The New York *Sun* of Feb. 8 published a notice of the capitalization of the various electric lighting companies which have made their appearance in this vicinity during the last three years. The notice also deals with the fluctuations in prices which have marked the dealings in this class of securities. It should be here stated that since this notice was published in the *Sun* the quotations of shares in the parent Edison concern have improved somewhat. On Feb. 19 a fair figure would be $400 per share. The notice is as follows:

The stocks of the electric light companies made their first appearance in Wall street about three years ago. The stock of the original Edison Company was the first that was dealt in, and it has sold at prices that have never been reached by any other. The shares of other companies speedily followed those of the Edison into the street. A most remarkable speculation in them immediately attended their advent. None of them have ever been listed by the Stock Exchange, and though most of them have been called in the room for dealing in unlisted securities, the transactions in them there have been small compared with the sales that have been made in the street. Those sales have been negotiated or made through what are known as outside brokers or brokers in unlisted securities. One or two of these brokers, notably Mr. A. J. Saportas, have made a specialty of dealing in electric light stocks. Mr. Saportas has followed the movement in these stocks from its inception, and has dealt more extensively in them than any other broker. The speculation started with a boom. Prices, particularly for the Edison stock, fluctuated widely and rapidly. The memorable bull speculation that then prevailed in the Stock Exchange, as well as outside of it, may have been partly responsible for the initial movement in electric light shares. The most potent reasons, however, were doubtless general ignorance or uncertainty about the true value of the inventions and discoveries then being made

in electric lighting, and the mystery with which those developments were surrounded. Since then the several companies have been demonstrating what they are capable of doing, and the subject of electric lighting has been studied and investigated till prices for these shares have gradually drifted to figures that doubtless approximate their intrinsic value.

In the following resume of the market for electric light shares, the figures given are of sales that have been made through brokers. Both higher and lower prices may have been obtained at private sales.

The Edison Electric Light Company, the parent company and pioneer in the field, was originally organized with a capital of $300,000. This was increased to $460,000, and then to $720,000. The company owns about 51 per cent. of the stock of the Edison Illuminating Company, which was organized to use the Edison inventions in this city, and of the stock of the Edison Company for Isolated Lighting. The value of these holdings is taken into consideration in estimating the value of the shares of the parent company. When its capital was $300,000, its $100 shares sold as high as $3,700. Three shares sold at that price. The purchaser of these shares is reported to have sold them at private sale on the same day for $5,000 a share. The original seller paid $2,000 a share. He therefore made $5,100, and the second seller made $3,900. All of these transactions, it is said, took place in one day. One of the first transactions in this stock was the sale of five shares for $1,000, or $200 a share. On the day after this sale the purchaser sold two of the shares for $500 a share, thus recovering the amount of his purchase money for the lot. He afterward sold the three remaining shares for about $8,000, which was his profit on the venture. At times the price jumped up $100 a share in an hour. The son of the president of one of the largest corporations in the country sold twenty shares that cost him $2,000—that is to say, $100 a share—for $23,500, or $1,175 a share. The purchaser sold the stock shortly afterward for $1,375 a share. The stock is now selling at the lowest figure it has touched since it came upon the market, namely, $250 a share. A sale was made at that figure not long ago. The price has twice been affected by the increase of the company's capital, as the increase in capital has been offered to the stockholders at par. At the present market value of the shares of the Edison Illuminating and of the Edison Isolated companies, it is estimated that the stock of the parent company is worth about $150 a share, merely as representing the interest of each share in the aggregate market value of the stocks held by the company.

The capital of the Edison Illuminating Company is $1,000,000 and the par value of its shares is $100. Fifty-one per cent. of its stock was given to the parent company for the Edison patents, which it is entitled to use exclusively in New York city. The company proposes to light the city by districts. Its first district is bounded by Spruce street, Park row and Broadway, and the East River. It has equipped an engine house in Gold street, and laid wires and put in fixtures extensively through this district, but has not yet succeeded in furnishing any light to speak of, though it has about 6,000 lamps which have been lighted at times. The stock of this company has sold as high as $125 a share and as low as $30. The former price was reached before the company had got much of its plant, and the latter a few months ago. The last sale is reported to have been at $50 a share, and it is now offered at $50, $40 a share being bid for it.

The Edison Company for Isolated Lighting was organized with a capital of $500,000, which was subsequently increased to $1,000,000. The par value of the shares is $100. The object of the company is to furnish light by the Edison system and patents to single buildings or establishments. Fifty-one per cent. of its stock is owned by the parent company, having been issued to it for the patents and privileges. When the capital of the company was $500,000 its stock first sold up to $240 a share, and then as low as $175 a share. The stock now brings $155 per share. It is offered at $155, and $140 is bid. The price at present, however, depends to an extent upon the number of shares offered or bid for. This is the only Edison Company that has paid a dividend. One of ten per cent. out of the operations of the last year has recently been declared. Though the parent company has never paid a dividend, large profits have accrued to its stockholders by two awards of new stock at par at times when the premium was very great.

The Edison Electric Light Company of Europe was organized about two years ago, simultaneously with the other offshoots of the original company. Its capital is $2,000,000 and the par value of its shares $100. It has a monopoly of the Edison system in Europe. Its stock sold soon after it came on the market at $165 a share, and has declined to $40. The present quotation is $40 bid, $55 asked.

The capital of the United States Electric Lighting Company is $1,500,000. Its shares, of the par value of $100 each, sold about three years ago at $300 per share. During the extreme depression in this class of stocks about six or seven months ago its stock sold at $82.50 a share. The last reported sale was at $125, and at present $130 is bid and $150 is asked. The company has just declared its first dividend. It is five per cent. in cash, but whether it is to be considered as an annual, a semi-annual, or a quarterly dividend cannot be learned.

The patents of the United States Company are used extensively in this city by the United States Illuminating Company, which has a capital of $1,000,000, only one-half of which has been issued. The transactions in its stock have not been large. This last was at $103 per share.

The Brush Electric Company of Cleveland sustains practically the same relation as the Edison to several minor companies. It has a capital of $3,000,000 in $100 shares. The stock sold recently at $110, and it is said that it can be bought at that price now. The present bid price is $100. It has never sold below its par value. The company has paid quarterly dividends of two per cent. for three years.

The Brush Illuminating Company of New York uses the Brush inventions and system in this city. It furnishes, it is said, over 1,000 lights nightly in the up-town district, which it supplies at an average price of 80 cents a light per night. It began furnishing street lights to the city at 40 cents a light per night, but the price has been advanced to 70 cents. The cost to the company is said to be 50 cents. It is reported that the company will earn $100,000 net this year. The capital is $1,000,000, and the $100 shares have sold as high as $125, and about three months ago had dropped to $70. The current quotation is $100 bid and $110 asked.

The Brush Illuminating Company of New York owns most of the stock of the Brush Electric Light Company of New England, which uses the Brush system throughout the Eastern States. This stock is not dealt in, but it is supposed to be worth about $500 or more a share. The company has just declared an extra cash dividend of 30 per cent., making a total of 58 per cent. that it has paid within a year. The report is current that the New York and New England companies contemplate a consolidation.

The Fuller Electrical Company manfactures electrical machines. It has a capital of $870,000, of which $300,000 is common stock and $570,000 preferred. The par value of both classes is $100. The common stock has sold from $32 to $22 a share, and the preferred from $61 to $75 a share. Present quotatations are $30 bid for the common, offered at $32, and $75 bid and $100 asked for the preferred.

The American Electric Light Company has been distinguished chiefly for the counter charges of fraud that some of its officers exchanged a few months ago. The company has a capital of $500,000 in $50 shares. Some of these shares have sold at $35. They are now offered at $4.75.

The Brush-Swan Electric Light Company is the last organized enterprise of this class. It combines all the Brush and Swan inventions, and uses electricity generated by the Brush process in the Swan incandescent lamp. The capital of the company is $600,000, and the par value of its shares is $100. Sales have been made at $150 a share, and it is now quoted at $105 bid and $150 asked.

For the common protection of their patents, all of the leading electric light companies formed some two years ago the Gramme Electrical Company. The shareholders are the American Electric Company of New Britain, Conn.; the Brush Electric Company, the Edison Electric Light Company, the Fuller Electrical Company, the Jablochkoff Electric Lighting Company, the United States Electric Lighting Company, and the Weston Electric Light Company. The stock has no marketable value.

While the prices that now prevail for the shares of most of the electric light companies are the lowest that have ruled, it will be observed that there has been considerable recovery in the case of those companies which have demonstrated their ability to make returns upon the money invested in them. These, however, are few in number, and, with the exception of the Edison Isolated, are companies that furnish only the large lights, that can be utilized chiefly for out door lighting or for the illumination of large areas. The small light that is required for general in-door illumination has not yet been furnished for general use, nor has any return been made upon the money invested in its development and introduction. Where bills have been rendered for furnishing the light suitable for office or house purposes, they have, according to some persons who have paid them, been larger than a gas bill would have been for the same amount of service. So far as speculation is concerned, however, the inquiry for electric light shares is, according to the brokers, increasing and the volume of the transactions larger as compared with three or four months ago, when trading with them was at a standstill. This, doubtless, is largely due to the first dividends recently declared by two or three of the companies.

And What Will Happen Next?—The Board of Aldermen of Brooklyn, N. Y., have astonished the people of that city by actually passing a resolution which will prove of great service. It is a rare matter to be able to say such a thing of any board of aldermen; but in the case of the Brooklyn board it is simply wonderful. At a late meeting of that body they decided to require the gas companies of the city to equip their meter-takers and collectors with badges. This step was taken for the protection of householders from sneak thieves, who, representing themselves as employees of gas companies, gain admission to houses for the purpose of plundering.

The Relative Economy of Solid and Gaseous Fuel.

The London *Journal of Gas Lighting* states that an article in a recent number of *Le Gaz Belge* deals with the question of the economy of gaseous as compared with solid combustible for domestic or industrial purposes. The writer commences by remarking that when combustion takes place, the quantity of oxygen required by the carbon does not by any means correspond with that required by the hydrogen; and as these elements are not generally separated, a certain quantity of one or the other must be burnt to waste. The carbon can only combine with the quantity of oxygen necessary to form carbonic acid, and the hydrogen takes up only that which will produce aqueous vapor. The former of these elements therefore always absorbs more oxygen than the latter, supposing that there is sufficient to ensure complete combination.

When solid fuel is employed, it is not only necessary to provide the supply of oxygen required for combustion, but also to convey into the furnace sufficient air to drive off the products of that combustion, by ensuring the contact of the oxygen with the whole surface of the combustible material. In practice it is found that nearly twice the quantity of air theoretically required has to be provided; and this, of course, doubles the volume of the gases that have to be heated. It may thus be assumed that half the air admitted into a furnace does not serve for combustion; and this excess of air naturally carries off a considerable quantity of heat. The loss, however, is a necessity; for, if less air were supplied there would be a possibility of combustion being incomplete, and the evil would become greater. In fact, the carbon passing into the condition of carbonic acid (the result of the most complete combustion) develops 7,200 heat units; while with a less perfect transformation it furnishes carbonic oxide, giving only 1,400 heat units. When gaseous combustibles are utilized, these losses may be prevented; since very nearly the determined quantity of oxygen may be supplied, and this be caused to mix more closely with the combustible elements, without necessitating the expenditure, on the part of the mixture, of an amount of energy comparable with that required by the solid combustibles.

The commercial value of the two kinds of combustibles may be approximately stated as follows:—Coals have, according to their quality, a standard of from 4,500 to 7,500—say an average of 6,000—heat units. From this number must be deducted 500 heat units lost in effecting combustion. There remain, therefore, 5,500 heat units. Now the absolute available heat of furnaces employed for industrial purposes does not exceed 40 per cent. of their theoretic heating capacity, and therefore the effective calorific power is reduced to about 2,000 calories. The cost of furnace coal of average quality ranges from 6 to 8 frs. per 1000 kilos—say 0.8 c. per kilogramme (2.2 lbs.). The 2,000 calories heating power, therefore, cost 0.8 c. If coal gas is taken as the element of comparison—its yield in heat being practically 12,000 units for the net cost of 7c.—the ratio becomes 1 : 4 for coal and gas respectively. This, however, is exclusive of the cost of labor, maintenance of appliances, transport of fuel, etc., all of which would double the net cost of the solid combustible material. So that the proportion really becomes 2 for coal and 1.4 for gas. But the solid combustible furnishes only 2,000 calories, while if it is transformed into lighting gas it would furnish 3,000 calories. The final ratio of net cost therefore becomes 3 for coal against 1.4 for gas; in other words, the employment of illuminating gas as a combustible is attended with about twice the economy that results from the use of ordinary coal.

Dowson's Gas Producer.

Engineering gives an illustrated description of the Dowson gas producer in a late number. In the course of the article the following statements appear:

The gas engines made by Messrs. Crossley Brothers, of Manchester, are known to have a very high efficiency, and the fact that they are now being sold at the rate of over 2,000 a year in this country alone is a practical proof that they are thought well of by power users. So great, in fact, has been the strain put on the resources of Messrs. Crossley Brothers that they have been obliged to build entirely new works on a large scale. The power required will probably be 200 to 300 horse power, and Messrs. Crossley Brothers have decided not to employ steam, but to drive all their machinery and tools with gas engines. Several preliminary trials were made with the gas produced in the Dowson apparatus, and the results were so satisfactory that it has been adopted for permanent work, and already nearly all the gas producing plant for 150 horse power has been laid down.

An engine, indicating 27 to 30 horse power, has been working regularly with this cheap gas over two months. During this time tests have been made to determine the actual fuel consumption, and the following are the results obtained:

1. Time allowed to get the generator fire in order for making good gas, 45 minutes.
2. Fuel consumption per 1,000 cubic feet passed into gasholder, 13.2 lb.
3. Gas consumption per indicated horse-power per hour, 109 cubic feet.
4. Fuel consumption per indicated horse-power per hour, 1.4 lb.

These results confirm the tests made by Mr. D. K. Clark for the Committee of the Smoke Abatement Exhibition, with a 3½ horse-power Otto engine worked with the cheap gas. He gave the following:

1. Gas comsumption indicated horse-power per hour, 110.3 cubic feet.
2. Fuel consumption per indicated horse-power per hour, 1.4 lb.

The engine now working with this gas at Messrs Crossley's new works is driving the foundry blower, which delivers an average of about 4,000 cubic feet of air per minute, and a mercury gauge indicates with accuracy the steadiness of the driving. The fuel used in the gas generators is small sized anthracite from South Wales, costing 3s. 3d. a ton in truck at the pit.

Items of Interest from Various Localities.

Gas Matters at Youngstown, Ohio.—Mr. George Cornell, Secretary and Treasurer of the Youngstown Gas Company, writes us that his company, on Feb. 1, reduced the price of its gas. The rates under the new schedule are as follows:

Less than 5,000 feet monthly, $1.80 per thousand.
From 5,000 to 15,000 feet monthly, $1.60 per thousand
From 15,000 to 25,000 feet monthly, $1.50 per thousand.
25,000 feet and upward monthly, $1.40 per thousand.

This is a uniform reduction of ten cents per thousand to all classes of consumers from the prices formerly charged. In his letter to us, in announcing the reduction, Mr. Cornell says: "You see that we have a graded price; and it occurred to me to write to the Journal and say that we have followed the plan of selling gas at different prices, according to the amount used, for several years, and find that it works well and creates no dissatisfaction among our consumers. It reduces the bills of some just when they reach the highest point, by introducing them into the next class, and so helps them over the large bills of the winter season. It enables us to supply large manufacturing and other establishments at prices which they are willing to pay, and which we could not offer to customers generally. We have no special or private rates, but offer the same terms to all."

Coal Mining in the United States.—Over thirty million dollars were paid in wages last year to the miners of bituminous coal in the United States. The production of coal is the great mining industry of the country, far exceeding in value the gold, silver, and iron industries. More than forty million tons were taken out last year. There were also twenty-eight million tons of anthracite coal mined. England produces more than twice as much coal yearly as the United States, and takes it all from an area about the size of Ohio. The coal deposits of this country have been barely touched. They are found in almost every part of the land. The mines at Seattle, in the extreme northwest, produced 150 tons last year, and numerous deposits have lately been discovered on Puget's Sound and along the line of the Northern Pacific railroad; so it does not seem likely that any part of the country will want for fuel for many years.

Shutting off Gas Automatically in Case of Fire.—A Providence (R. I.,) inventor has patented an automatic device for shutting off gas in burning buildings. It consists of a hollow ball filled with lead or fusible metal, with the exception of a central passage. This ball is inverted in the service pipe, the latter being bent in U-form. When a fire occurs, the metal in the ball is melted and drops into the lower part of the U, effectually shutting off the gas. The end desired could be more readily and surely obtained by having a shut-off placed at the curb of the street, similar to the street-washer arrangement in use for cutting off a water supply. This is done in a great many places in this country, notably so in Newark, N. J., the Newark Gas Light Company having such an arrangement wherever the supply pipe reaches to a certain diameter. The practice could be made more general, and, in fact, should extend to all classes and grades of supply pipes. Much saving would result therefrom.

New Illuminating Gases.—The Rome *Daily Sentinel* gives credit to the *Iron Age* for giving a brief sketch of a "newly invented illuminating gas" which is being made in Liverpool. It is "estimated that the labor of three men will by this process produce as much gas as the labor of one thousand men by the old methods, and the new gas when produced has six times the luminosity of the old or present sort." The weary gas man need hardly seek rest now in the barrel of "Standard oil" spoken of in a late issue, for the "new idea" is found in a "bushel of lime." The traditional party who makes two blades of grass grow where only one grew before had better look to his laurels now, for what special wonder we have must be reserved for the man who can make three do the work of a thousand. It is just possible that

this is our old friend, "Dixon's metallic gas," late of Sydney, Australia, and later of Liverpool. We must say that we do not believe the *Iron Age* ever gave space to such an absurdity.

THE NORFOLK GASOLINE EXPLOSION.—The explosion of a gasoline machine in the restaurant of A. J. Smith, at Norfolk, Va., which was attended with such disastrous results, has convinced one more party that it is economical to burn gas. The gas machine which caused the trouble was one of the Lay pattern, and had been in use for some time. It had gotten out of order, and a plumber was called in to fix it. The plumber let the naphtha it contained (about 40 gallons) run out of a waste cock to the ground. The naphtha found its way under the floor of the restaurant, and, passing under the kitchen range, ignited, blowing the place to pieces. The proprietor of the restaurant has since advertised in the local paper that his place has been refitted, and adds, "I furthermore state that I now only use city gas."

GASOLINE EXPLOSION AT ROCK CITY, N. Y.—On the night of Feb. 10, a visit of the watchman, with his lamp, to the cellar of Blaisdell's Knitting Mills, at Rock City, N. Y., exploded the gasoline machine and set the factory on fire. The watchman was badly burned, and the loss on property is estimated at $50,000.

STREET LIGHTING AT TERRE HAUTE, IND.—The City Council of Terre Haute, Ind., on Feb. 6, entered into a contract with the Terre Haute Gas Company for lighting the streets of that place. The company agrees to light the city lamps on 27 nights in each month for the sum of $27 per lamp per annum; the contract to cover a period of three years. A considerable extension of street mains was also provided for.

LECTURE ON GAS MATTERS AT JACKSONVILLE, ILL.—Mr. Edward J. King, Secretary of the Jacksonville (Ill.) Gas Light Company, delivered a lecture on gas and gas matters at the rooms of the Y. M. C. A. of that place, on the evening of Friday, Feb. 9. His advice to his listeners regarding globe burners, etc., was received with much attention. This is the way to "educate" the consumer.

POUGHKEEPSIE STREET LAMPS.—On Monday, Feb. 5, the committee on street lamps of the Common Council of Poughkeepsie presented the following report, which was unanimously adopted:

To the Honorable the Common Council of the City of Poughkeepsie:

Gentlemen—Your Committee on Lamps most respectfully report that the contract between the Citizens' Gas Company and the city of Poughkeepsie, which went into effect June 1st, 1882, has been violated in many particulars, inasmuch as the quality of the gas is inferior to that specified in the contract; that in the early evening hours the light furnished is much better than after midnight, when the pressure is reduced, whereas the contract specifies a continuous light of sixteen candle power for the whole night; your committee being convinced that the amount furnished does not exceed 2 feet per hour, when the requirement of the contract is 4 feet per hour; that the Citizens Gas Company have failed in numerous instances to repair cocks, tubes and burners when out of order and to keep the lamps in good burning order and to clean the same at least once in each week and oftener if necessary. Your committee are of the opinion that inasmuch as the city is paying $34.00 per lamp, or at the rate of $2.25 per thousand cubic feet, whereas a private consumer is supplied at the rate of $1.75 per thousand feet and in some instances much less, the city should have as good light and as much care as is generally shown to private consumers. The city, paying 50 cents more per thousand cubic feet, should, in our opinion, according to strict business principles, be supplied with gas at 25 or 50 cents per 1,000 feet less (being a large consumer) than private parties. Also, that your Committee are further of the opinion that the city is paying for more gas than is consumed and that the Citizens Gas Company shall be strictly bound by the terms of its contract, which expires June 1st, 1883. We also recommend that an early time may be named to advertise for estimates to furnish gas to the city and that we will be enabled by competition to save the city at least five thousand dollars in the single but important item of gas alone.

C. B. CUNLEY, Chairman.

In reply to this report, Mr. A. L. Allen, vice-president of the Citizens Company, sent a lengthy communication to the lamp committee of the Common Council, which was read at the meeting of Feb. 19. As is natural to suppose Mr. Allen objected to the tenor of the report of the committee, and stated that his company had had much to contend against in the shape of trouble arising from maliciousness. Mr. Allen makes one statement in his letter which certainly must not have been premeditated. He says: "Hartford, Conn., has a population of over 42,000, and only one gas company. Private consumers *have* paid $2.25 for gas, and the city, according to the AMERICAN GAS LIGHT JOURNAL, pays $34 per lamp." This is hardly fair to Mr. Harbison and his associates in the Hartford company. Why Mr. Allen employs the word *have* (we have italicized it) we cannot understand. Right above, where he speaks of cost of gas in New York City, he might just as well have said that consumers in New York have paid $3.25 instead of $2.25. Mr. Allen must know very well that since Dec. 1 the price of gas in Hartford was reduced to $1.90, and for some time previous had been only $2.00 a thousand.

REDUCTION IN PRICE OF GAS AT MACON, GA.—Mr. A. E. Boardman, Treasurer of the Macon Gas Light and Water Company, announces that on and after March 31st his company will reduce the price of gas from $3 to $2.50 per thousand cubic feet.

SHOCKING KEROSENE EXPLOSION.—A despatch to the Galveston *News*, from Brackett, Texas, says: "On the night of February 16th, at a point twelve miles distant from here, four small children of Michael McDonald, one of the oldest settlers, were burned in their beds from the explosion of a lamp left burning by the mother for the return of four daughters who were at a ball. The father was also absent. The mother escaped with her infant babe, but could not rescue the other children, who were burned to a crisp."

STREET MAINS IN PHILADEPHIA, PA.—The Gas Trust has decided that new mains of the dimensions of 30, 20, and 16 inches, shall be laid as follows: Start at Chestnut and Twentieth streets, thence to Front, to Girard avenue, to Norris, to Lehigh avenue, to Richmond street.

TRANSFUSION OF BLOOD AS A MEANS OF RESTORING CONSCIOUSNESS IN CASES OF ASPHYXIA.—C. J. V. Okeburg was found in a room at the Hotel St. Andre, No. 11 Eleventh street, New York City, on the morning of Saturday, Feb. 17, in an unconscious state, caused by the inhaling of illuminating gas. Okeburg had retired to his room at about 11 o'clock P. M., on the preceding evening, and went to bed. At 6 o'clock A. M., on Saturday morning a strong odor of gas prevailed in the halls of the building, and a short inspection led to tracing the escape to room No. 6—the room occupied by Okeburg. The door was forced open and the occupant found insensible, and little hope of restoring him to consciousness was entertained. Dr. Ferdinand C. Valentine was at once called in, and the usual methods of inducing artificial respiration were resorted to. In the meantime it was discovered, from a search of the injured man's effects, that he was a friend of Dr. Gerries, who was sent for. A consultation was held between the two physicians, and they decided to try the operation of transfusion. A negro servant, attached to the hotel, named Banks, consented to furnish the blood necessary for the operation. At 1 o'clock P. M., the operation was performed, six ounces of blood being injected into Okeburg's veins. Dr. Valentine claimed that the results were entirely satisfactory, inasmuch as consciousness was restored to the patient at 6 P. M.

Dr. Valentine described the operation as follows: "After first tightly binding the arms of the person from whom the blood is to be taken and of the person to whom the blood is to be transfused, an incision is made in one of the veins of the former and the blood which flows from it is placed in one of two cups or bowls. Then the blood which meantime has been thoroughly beaten to prevent coagulation must be strained through a piece of linen into another cup, and it is then ready for placing into the arm of the patient. This is done slowly—a little at a time—by the aid of the syringe through a puncture made in a vein in the arm, and the operation is done. It is, as you will see, simple and almost invariably effective. Of course care must be taken to have a healthy person to draw from, as otherwise any disease might be transferred, though, to my mind, I would sooner have an unhealthy person to draw from than none at all."

STREET LIGHTING IN SAN FRANCISCO, CAL.—The amount of money available for the settlement of the city's bills for street lighting is not sufficient. At a meeting of the committee on street lights held Feb. 6, an attempt was made to settle the difficulty. Messrs. J. B. Haggin, Peter Donahue, and Superintendent Crockett represented the gas company's interest during the proceedings. The council agreed to pay $11,500 per month, so long as the funds held out (there being at the date mentioned about $62,000 in the street light fund), and authorized the gas company to cut down their supply of gas so as to keep within the limit named, the committee reserving the right to say what lamps shall and shall not be extinguished. The number of lights now in use on the streets is 5,438, and the proposed reduction will bring the number down to about 3,000.

GAS MATTERS AT WASHINGTON, PA.—Mr. John C. Hastings, Secretary and Treasurer of the Washington (Pa.) Gas Light Company, writes us that on the first of January his company reduced the price of gas, to general consumers, to $1.50 per thousand cubic feet. The public lamps are lighted according to a "moon schedule," and the price paid for each lamp is $15 per annum. The public lamps number 48, and the company has about 300 pri-

vate consumers. This is certainly an excellent showing for a town of the size of Washington, Pa.

Richmond (Va.) Gas Company.—A short time since it was proposed to rebuild the works of the Richmond company, the complaint being that the demands made on the works exceeded the capacity of the plant. When the idea of change was first mooted, several propositions were made looking to the introduction of processes for the making of gas from materials other than coal. Propositions were made by Messrs. Stokes, and Granger & Co., of Philadelphia, and Magnus Gross. The proposition of Mr. Gross was as follows: He offered to put gas into the holder at 50 cents per 1,000 feet, of 25 candle power, and to build a complete gas plant of not less than 700,000 cubic feet daily capacity; the contract to be for ten years, the city to have the right to purchase the works and the exclusive patent rights for the city of Richmond under the Magnus Gross patents, and owned by the Excelsior Gas Light Company, and all future improvements and additional inventions thereto, as follows: At any time during the first year, $50,000; at the end of the first year, $45,000; end of the second year, $40,000; end of the third year, $35,000; end of the fourth year, $30,000; end of the fifth year, $25,000; end of the sixth year, $20,000; end of the seventh year, $15,000; end of the eighth year, $10,000; end of the ninth year, $5,000; end of the tenth year, $1. At the meeting of the Board of Aldermen, held Tuesday, Feb. 20, the question of the adoption or rejection of the different propositions came up. The first action taken was as to the advisability of adopting the Stokes plan in preference to that of Granger, and the motion was lost. A vote was then taken on the policy of adopting the Gross proposition; this was also rejected. The Granger plan was then acted upon, and this shared the same fate as the others.

There is very little probability of any change being made in the mode of manufacture at Richmond.

The Mutual Gas Light Company of Detroit, Mich.—The city controller was directed to proceed, under the common council ordinance passed Dec. 14, 1877, revoking the charter of the Detroit Mutual Gas Light Company, to seize the pipes, fixtures, conductors, and service pipes of said company within the limits of the city. The outcome of this resolution will be a long and hot legal battle.

What Might Have Caused a Frightful Disaster.—About three weeks ago an awning under the Detroit Opera House was set on fire by an electric light wire, just at the close of a matinee entertainment—the house being crowded with women and children. The Detroit *Free Press* says, that "had the fire occurred a few moments before, a panic, with consquences of unknown horror, would have resulted." The same journal says that "a greater vigilance over the wires, or a more perfect insulation, is becoming absolutely necessary."

More from Detroit.—There is much dissatisfaction with the system of lighting the street lamps of Detroit, Mich., on the moon-table idea. It is suggested by the citizens of that place that it is time to discard this old fossilized custom of lighting the streets at the diction of an almanac, and take a long stride forward. If street lamps are for any good purpose, it ought to be to light the streets on dark nights.

Messrs. Taylor & Anderson All Right.—"We have the pleasure of informing our friends and the gas works community generally that, while sympathizing with the sufferers, we are high and dry, 20 feet above the overflow, and only the flood of trade has reached us, notwithstanding the reports by some parties that our factories have been stopped."

"Taylor & Anderson."

"*Cincinnati Gas Retort and Fire Brick Co.*, Cincinnati, Feb. 20, 1883."

Price of Gas Reduced in Chelsea, Mass.—George W. Moses, Treasurer of the Chelsea (Mass.) Gas Light Company, writes us that his company has reduced the price of its gas to $2.50 per 1,000. Keep it up.

The Right Way to Look at it.—Evansville, Ind., wants to try the new "mast" system of placing the arc light. The Evansville *Journal* evidently does not think so very favorably of the idea; and, in dealing with the subject, speaks as follows:

"The new contract, it is understood, proposes to substitute for the six towers, each 250 feet high, originally contracted for, 12 masts, each 150 feet high, similar to the one, according to the *Courier*, which fell with a crash in Cleveland and came near destroying both life and property. In other words, it is deliberately proposed now by the electric light company to exchange the towers, whose height and stability constituted their chief charm, according to the *Courier* and other champions of the system, for 12 masts, whose liability to tumble over and endanger life and limb they have fully conceded. Before councilmen consent to this change they will do well to bear two or three facts in mind. First and foremost, the city is in no financial condition to indulge in two systems of street lighting. The city already has a contract with the gas company which will hold good until the city is as well lighted for less money. The electric light company ought to be required to indemnify the city against all liability or loss by reason of forfeiture of the gas contract before entering into any new contract. If the electric light people are so confident of the success of their system, they cannot reasonably object to giving such a bond.—This is business and common sense, not politics or jobbing."

Electric Light in Washington Market, N. Y. City.—The United States Electric Light Company have removed their incandescence lamps from the stands and booths in Washington Market. The reason given is that they were unable to supply the lamps. The company proposed to charge consumers at the rate of $2 per lamp per month, the lights to be charged for whether burned all the time or not at all. Several marketmen, among whom may be mentioned C. W. O'Brien & Co., Kennedy & Co., Butler & Bauer, Durando & Co., Kay & Co., besides many others, all agree in stating that at no time was the illuminating service rendered by the lamps comparable with that obtained with gas. It might be here stated that the incandescence lamps were in use in the market about two months.

Electric Light in Boston, Mass.—At the meeting of the Boston Board of Aldermen last week the following order was adopted:

Ordered, that the committee on lamps be and they are hereby authorized to contract with any responsible electric lighting company or companies, for furnishing the city electric lights, the cost of the same to be charged to the appropriation for lamps.

This order is making considerable stir, from the fact that two of the committee on lamps are interested in electric lighting companies in this city—the Brush and the American. A general interpretation of this order has been that it is to authorize the committee to light the entire city by electricity. Alderman O'Brien explains that the order is simply introduced to allow the committee to expend the balance of the appropriation made for electric lighting, amounting to $4,500.

The State of the Coke Market at Connellsville, Pa.—The coke trade continues very dull. Many of the companies are running on only "half-time," and fears are entertained that the end of the season of depression is not yet reached.

An Entering Wedge.—The United Gas Improvement Company are trying to get into Denver, Col. They propose the following;

"It is agreed that the charge for gas to the inhabitants of the City of Denver shall not exceed $2.25 per 1,000 cubic feet, for 20-candle power gas, the city to pay, for what is used in the public buildings, not more than $1.75 per 1,000 cubic feet for the same quality of gas, said gas to be safe, pleasant and brilliant; for lighting, extinguishing, cleaning and furnishing the gas for street lamps of the city a price not exceeding $27 per lamp per year will be charged—said "year" to include every night of the calendar year, from one-half hour after sundown to one-half hour before sunrise; the gas company to make at its own expense, all connections between its mains, conducting the gas through the streets to the meters in use in the houses of the consumers, without any charge to the consumers; the company is prohibited from transferring to any individual or corporate body the rights secured to them by the proposed ordinance, except it be to such company as shall be incorporated and organized expressly to carry out the provisions as stated in the ordinance."

Fatal Kerosene Explosion in Newark, N. J.—Mary Duffy aged 75 years, was burned to death on the morning of February 19th, at No. 20 New street, Newark, N. J., by the explosion of a kerosene lamp.

Queer Action of the Philadelphia Gas Trust Officials—The Committee on Works of the Philadelphia Gas Trust met on the afternoon of Feb. 19, to take action in regard to the proposals for coal previously opened. Mr. Smith, from a sub-committee to whom the bids had been referred, made a verbal report, in which he said they had ascertained that a number of bidders had been debarred from bidding because of the railroad companies not having fixed rates for the ensuing year. Mr. Smith then recommended that the proposals be re-advertised, except so far as concerned the 50,000 tons already awarded to the Chesapeake and Ohio Coal Agency. The representative of the Despard Coal Company considered it would be unfair to re-advertise after they had exposed their prices. Mr. Alcorn said that he had called on some of the officials of the Pennsylvania Railroad, and was satisfied that the coal companies knew the rates of this year. Mr. Smith argued that it was the duty of the committee to open the door for competition as widely as

possible by re-advertising, and then, if any combination was entered into by which prices are raised through discrimination in railroad rates the responsibility could be placed where it belonged, and the matter referred to Councils or the Legislature.

It was finally decided to re-advertise for proposals, except the 50,000 tons already awarded, to be opened at noon on March 1.

Mr. Smith and his brethren of the committee are very anxious to give everybody a chance, and it is hoped that the "funny man" of the Philadelphia *Press* can't hunt up any sign of the secrecy of Gas Trust proceedings in this arrangement. Mr. Smith loves the daylight so much that it is very improbable to suppose that he wants to put in a bid on his own or somebody else's account, but it certainly would be a very "cute" way of starting in. The figures given by the different coal companies already sent in would give an excellent bases to work upon. But to speak seriously, it is a strange course which has been adopted. There was no evidence of informality in any of the bids; and the argument that the railway companies have not fixed rates for transportation for the ensuing year seems to us to be absurd. It is little wonder that the representative of the Despard Company objected; and we have an idea that the representatives of some of the other bidding coal companies kept up a vigorous sort of "thinking" in the same direction. Plainly, the action of the committee is nothing short of a breach of faith.

Price of Gas Reduced in Denver, Col.—The Denver (Col.) Gas Light Company has reduced the price of gas from $3.00 to $2.75 per 1,000 cubic feet, with a further reduction of 25 cents per 1,000 on all bills paid before the fifth day of each month. Under this schedule the lowest price would be $2.50 per 1,000.

The Flood at Vincennes, Ind.—The Vincennes (Ind.) Gas Light Company have not been exempted from the "flood" troubles. Mr. Ramsdell has had his hands full; but has also had the satisfaction of knowing that the prompt action taken by him saved his company many thousands of dollars. The Vincennes *Daily Sun*, of Feb. 21, gives the following.

"The past few days has been no picnic for the gas company, as every rise of water in the river has increased their danger at the works. Mr. Ramsdell, the Superintendent of the works, has been working with his assistants night and day, and assures the writer their consumers will suffer no inconvenience from lack of gas. The gas company have had a force of men at work night and day since the water became dangerous, and have co-operated with the city hands in rendering the levee safe. Until the back water began to pile up in their yards their attention was given to the levee, but the sudden rise of water in the yards soon assumed alarming proportions. The coal house containing about 500 tons of Pittsburg coal is built on made ground, and, fearing a slide similar to that of the Cincinnati Southern depot, steps were at once taken to construct a levee for its protection. The work was accomplished during the night.

"About midnight water was discovered in the ash pits of the furnaces, and was watched through the night with great uneasiness, but we are informed this morning it has reached a height of 22 inches and stopped. A further rise of nearly 2 feet can come and the furnaces, by a little change still be kept going and the manufacture of gas proceed. About two o'clock this morning water was also discovered in the floor of the coal house having percolated through. This is no serious matter however. Two steam pumps are run night and day pumping water out of the cellars. We notice the gas holders were full of gas this morning, and as they contain nearly two day's supply while the street lamps are off there seems to be no danger of our city suffering the experience of Cincinnati, Louisville, New Albany and other cities. The water now stands from 8 to 10 feet deep in the lower end of the gas works yard."

Gas Lighted Buoys.—The Speaker laid before the House, on Feb. 22, a letter from the Secretary of the Treasury, in reply to an inquiry from Congress concerning the lighting of beacons and buoys. The letter is accompanied by a report from the Lighthouse Board setting forth the success of the experiments with gas lighted buoys in Currituck Sound, N. C., and New York harbor. The Secretary renews the expression in his annual report of the opinion that experiments in European waters justify the belief that gas may be thus introduced with good effect, and with economy to the service.

Only Twenty-three Fires.—A Boston (Mass.) paper states that one of the best testimonials as to the safety of the electric light for mill and factory illumination is furnished by the Boston Manufacturers Mutual Insurance Company. Of the concerns insured by them 82 are lighted wholly or in part by electricity, comprising 2,518 arc and 10,481 incandescent lights.

From all these lights *only* 23 fires have occurred from the following causes: Sparks, 8; water leaking or washing floors, 5; water condensing on beams, 2; falling carbons, 5; other forms of cross currents, 3.

Correspondence

[The Journal is not responsible for the opinions expressed by correspondents.]

A Practical Suggestion.

To the Editor American Gas Light Journal:

New York, Feb. 27, 1883.

Your remarks in the Journal of Feb. 2, under the heading "Some gas schemes which will bear watching," are well worthy of being read and considered by owners of gas works.

A most determined effort is being made all over the country by parties, who, until recently, were entirely unknown in the gas business, to wrest the property of the gas companies from those who reared it from infancy, and made it what it now is.

While there are different parties in the field owning a variety of oil gas patents which are used as weapons of destruction, the same idea pervades all—*i. e.*, bringing the entire gas business under one management, and to create a grand monopoly like the Standard Oil Company,

As you suggest, this property must be as valuable to the present owners as it can possibly be to any others; but nothing is more certain than this, that the gas companies must either awake from their lethargic condition on this question and make an effort to save their property or lose it in the early future.

At this point the query very naturally arises, how is this to be prevented?

The answer is, by being less timed and more firm, and not allowing yourselves to be so easily frightened by a phantom of wealth that has no existence. Unite and organize for defence and resistance in combinations of half a dozen or so, of companies situated within convenient distance of each other.

Contribute a small percentage of your receipts—say four—and place it in the hands of trustees, to be put at interest, and to be used in aiding any one of the companies that may be attacked.

In this way a sum would soon accumulate that would enable the warring company to sell gas very low—say at 25 cents over the cost, and the same amount per 1,000 drawn from the fund would enable them to pay 6 per cent. where the investment does not exceed $8 per 1,000 of gas sold per year.

Under this condition of affairs the forcing of companies to buy worthless patents at enormous prices, or submit to the building of an opposition works would not be so common and the business less attractive to speculators and wreckers.

The property of the gas companies of the country is worth $200,000,000, and it is well known by many of us that the combined wealth of those owning the water gas patents, and engaged in this business, is not nearly the one-tenth of this sum, and not a tenth part of that tenth is employed or liable in their operations. Bonds, with a bonus of stock as an inducement to buy them, is made by which they raise the means to menace gas companies, and freighten them out of valuable property.

The hundreds of millions which they profess to have is a myth, and the sooner gas companies know it and act upon it the better.

Every gas company that buys one of these patents in order to get rid of them, is not only disappointed, but aids them to menace their neighbor—only to see them return in a few months with another, which they are quite as persistent in selling and having them buy.

This is the experience of many; but should not be of more, now that they are understood.

They are not desirous of building works; that requires too much money; their favorite operation is to sell patents; next to that leasing the works.

The low price at which gas is now sold offers no inducement to build works to compete, hence the desire to lease, or sell patents. Yours truly,

H. Y.

Quick Work at Covington, Ky.

To the Editor American Gas Light Journal:

Covington Gas Works,
Covington, Ky., Feb. 23, 1883.

Perhaps our experience with the flood in the Ohio, and the following quick work done, may be of some interest:

On Monday, Feb. 12, at three A. M., after a fruitless attempt to keep the water out, it came in our retort house and extinguished the fires, with just sufficient gas on hand to last that evening. On Wednesday it attained a depth of 4 ft. 6 in. in the retort house, and into the second tier of retorts.

On Saturday, at nine A. M., the water had fallen sufficiently to enable us to start our fires, and on Monday, at one P. M., the gas was turned on the city, and the pipes cleared of the water and air, and in the evening every consumer had an ample supply. It may be well to state that coal was the fuel used to heat the retorts.

Beyond the damage done to the benches, and the stoppage of the work, the loss to the company was comparatively light. Yours truly,

R. Salter, Supt.

Gas Stocks.

Quotations by Geo. W. Close, Broker and Dealer in Gas Stocks.
(with W. B. Scott & Co.,)
34 Pine Street, New York City
March 2, 1883.

☞ All communciations will receive particular attention
☞ The following quotations are based on the par value of $100 per share.

	Capital.	Par.	Bid.	Asked
Gas Co.'s of N. Y. City.				
Central	$466,000	50	80	90
Harlem	1,800,000	50	97	99
" Bonds	170,000		—	—
Manhattan	4,000,000	50	248	252
Metropolitan	2,500,000	100	190	193
" Bonds	658,000	..	106	108
Mutual	3,500,000	100	112	115
" Bonds	1,500,000		100	102
Municipal	1,500,000	100	180	185
" Bonds	750,000		106	110
New York	4,000,000	100	122	125
Northern	125,000	50	—	95
" Scrip	108,000			
Gas Co's of Brooklyn.				
Brooklyn	2,000,000	25	112	115
Citizens	1,200,000	20	72	75
" S. F. Bonds	320,000	1000	105	107
Fulton Municipal	3,600,000	100	70	80
Peoples	1,000,000	10	48	—
" Bonds	290,000		104	107
" "	250,000		88	90
Metropolitan	1,000,000	100	78	85
Nassau	1,000,000	25	50	55
" Ctfs.	700,000	1000	90	93
Williamsburgh	1,000,000	50	60	65
" Bonds	1,000,000		100	101
Richmond Co., S. I.	300,000	50	70	75
" Bonds	40,000	—	—	—
Out of Town Gas Companies.				
Buffalo Mutual, N.Y	750,000	100	72	75
" Bonds	200,000	1000	95	100
Citizens, Newark	918,000	50	80	85
" " Bds.	124,000	—	105	10
Chicago Gas Co., Ills			150	155
Cincinnati G. & C. Co.			178	180
Consolidated, Balt.			41	42
Bonds			105	106
East Boston, Mass	220,000	25	122	128
Hartford, Conn	700,000	25	120	128
Jersey City	750,000	20	155	160
Laclede St Louis Mo.	1,200,000	100	117	—
Montreal, Canada	2,000,000	100	186	187
New Haven, Conn		25	144	—
Oakland, Cal			32	33

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R. W. VAN PELT, *President of the Company,*
And also President of the Yonkers Fuel Gas Co., and of the Westchester Gas Light Co.

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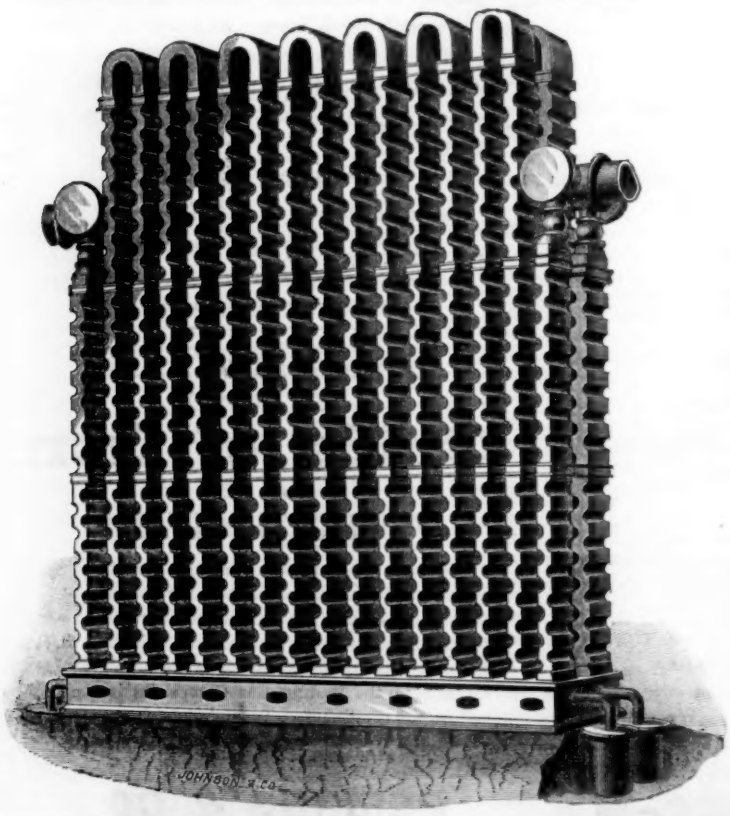

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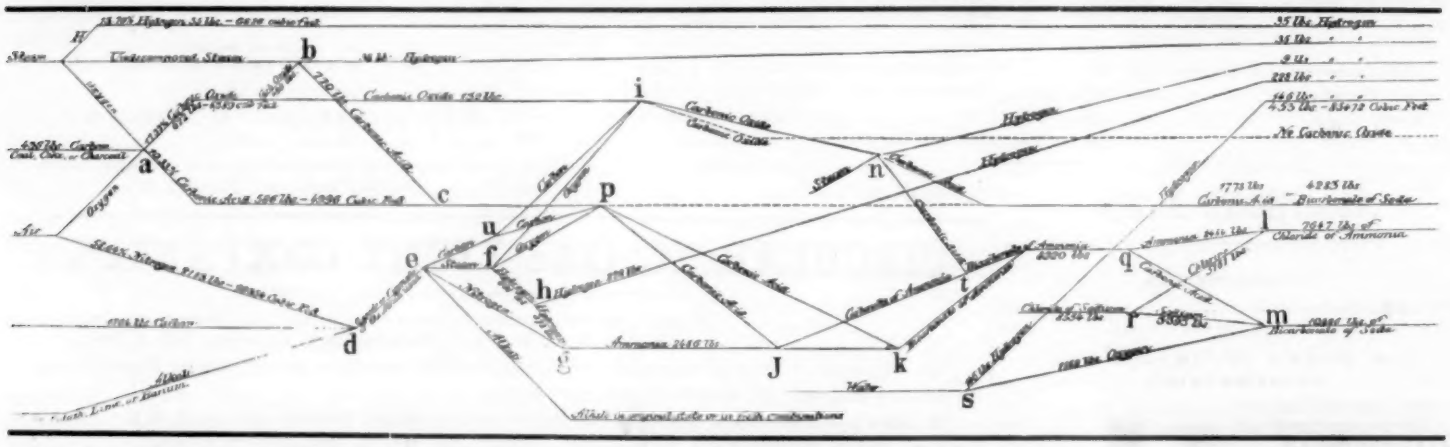

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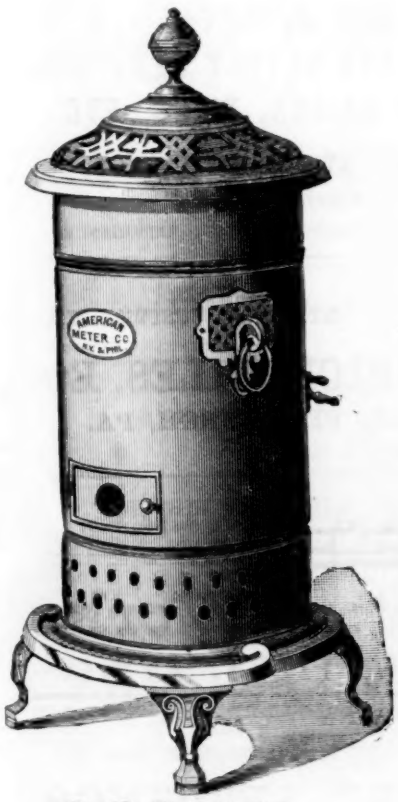

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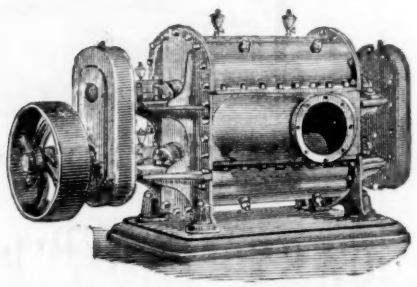

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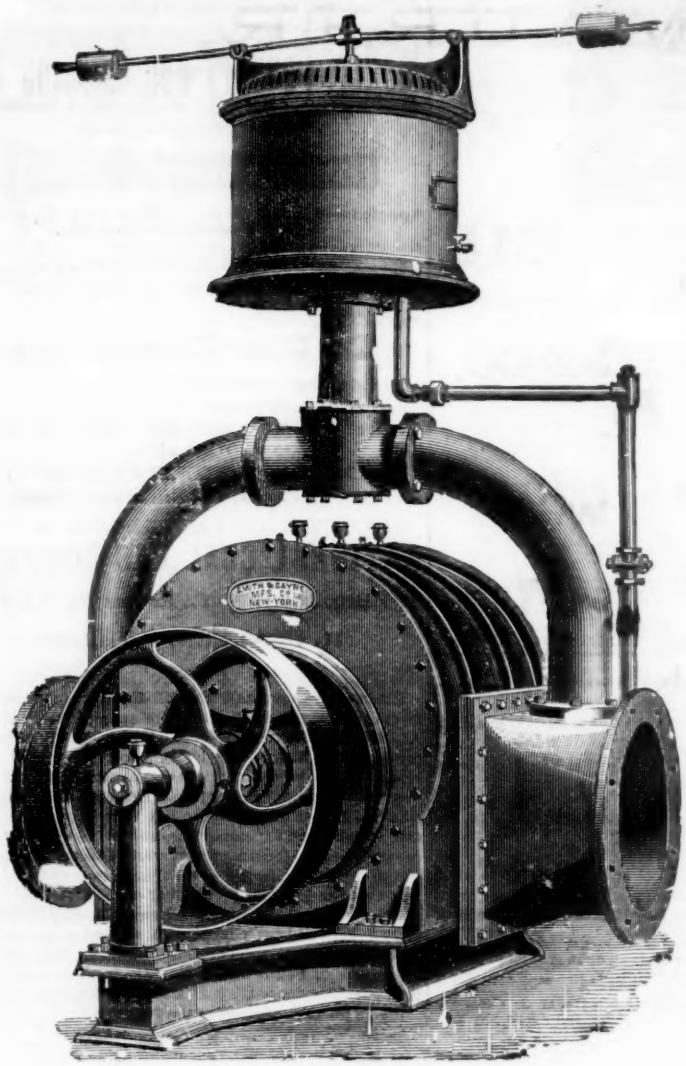

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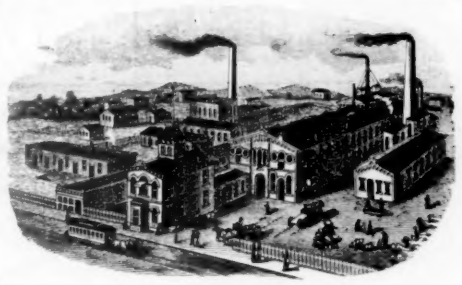

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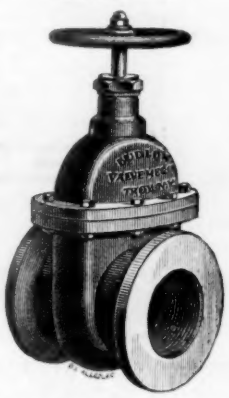

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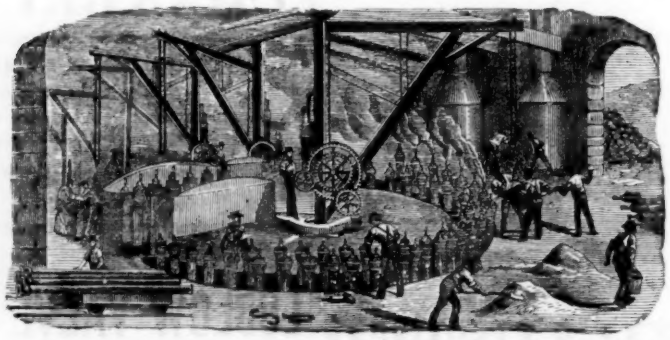

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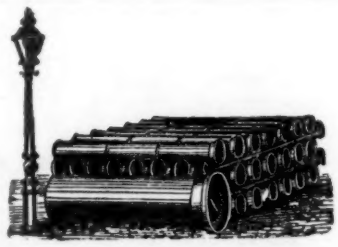

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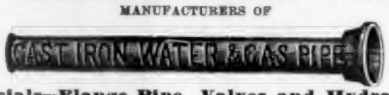

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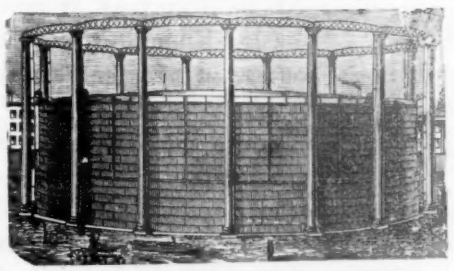

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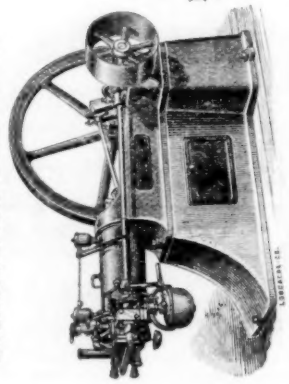

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BRAY'S PATENT LANTERN.

SOLE AGENTS IN AMERICA FOR

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PATENT FLAT-FLAME BURNERS

AND

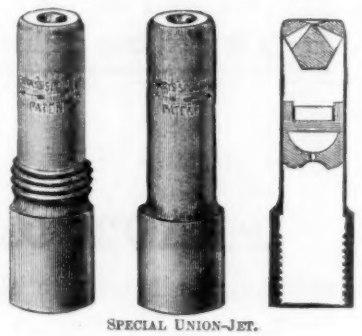
BRAY'S

Patent Lanterns

Bray's Patent Standard Slit-Union Burners do not Corrode in any Atmosphere.

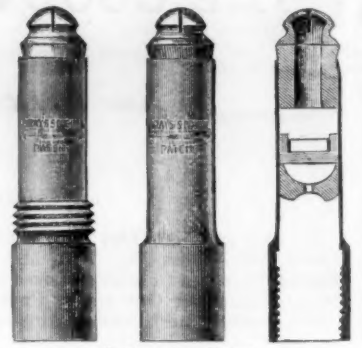
STANDARD SLIT-UNION.

They give a Permanently Well-shaped Flame, free from Roaring and Flickering.



SPECIAL UNION-JET.

The Special Burners are made for both High and Low Pressure. In ordering Burners our customers will confer a favor by stating the Pressure.



SPECIAL SLIT-UNION.

The "Special" Burners, as improved, are more adaptable to the requirements of gas illumination than any now before the public. They can be made to suit any pressure or quality of gas (including air gas). The gas inlet is so placed that it cannot be tampered with, and they are not liable to get out of order.

The following table and sentences in quotation marks are taken from the report of S. C. Ford, the United States Inspector of Gas and Meters at Washington, D. C., for the year 1881:

Description of Burner.	Pressure at points of Ignition.	Actual consumption of gas per hour.	Illuminating power in candles at rate of actual consumption.	Illuminating power in candles, at rate of 5 cu. ft. per hour.	Value of one foot of gas in terms of standard candles.
	Inches.	Cubic Feet.	Candles.	Candles.	Candles.
Bray's Standard Slit-Union (30 candles....	.255	6.90	30.04	21.76	4.35
" Special Slit-Union No. 7.....	.50	4.74	19.30	20.25	4.05
" " " No. 6.....	.50	4.10	16.61	20.25	4.05
" " " No. 5.....	.50	4.24	16.97	20.01	4.00
" " " No. 4.....	.60	3.49	12.58	18.02	3.60
" " Union Jet No. 7.....	.50	4.84	19.13	19.76	3.95
" " " No. 6.....	.55	4.32	17.10	19.79	3.95
" " " No. 5.....	.60	4.14	15.65	18.90	3.78
" " " No. 4.....	.55	3.38	12.04	17.81	3.56
" Regulator Union Jet No. 7.....	.50	4.99	17.69	17.72	3.54
" " " No. 6.....	.50	5.18	17.63	17.01	3.40
" " " No. 5.....	.60	4.37	13.71	15.68	3.13
" " " No. 4.....	.60	3.97	11.46	14.43	2.88

"On examination of the above table of tests, made with various burners, it will be observed that the illuminating power obtained with Bray's special burners Nos. 5, 6, and 7, both slit-union and jet form, was high; but with Bray's regulator burners only moderately good."

"The result of test with Bray's standard slit-union burner was highly satisfactory. This burner is best suited for street illumination, and will yield the maximum power obtainable from a cubic foot of gas."

"The special burners manufactured by Bray & Co. compare favorably with any yet inspected by this office. They are well made, and no doubt will prove very durable in practical use. They are best adapted for gases of high gravity."

Bray's Patent Standard Slit-Union Burners are of 30, 40, 50, 60, 70, and 80 candle power. The Patent Lanterns are adapted for burners of 50, 80, 100, 200, 300, 400, and 800 candle power, and are acknowledged to be the best lantern for street lighting yet invented. Price Lists and Circulars furnished on application.

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